

Service Manual

ViewSonic VP2000s

Model No. VLCDS26064-4W

20" Color TFT LCD Display

(VP2000s_SM_892 Rev. 1b Mar. 2005)

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Revision History

Revision	SM Editing Date	Documents Number		Description of Changes	Editor
		DCN Number	ECR Number		
1a	05/07/04	4530		Initial Release	A. Lu
1b	03/10/05	5238	4923	Scalar Change to GM1601	A. Lu

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1. Precautions and Safety Notices

1. Appropriate Operation

- (1) Turn off the product before cleaning.
- (2) Use only a dry soft cloth when cleaning the LCD panel surface.
- (3) Use a soft cloth soaked with mild detergent to clean the display housing.
- (4) Use only a high quality, safety approved AC/DC power cord.
- (5) Disconnect the power plug from the AC outlet if the product will not be used for a long period of time.
- (6) If smoke, abnormal noise, or strange odor is present, immediately switch the LCD display off.
- (7) Do not touch the LCD panel surface with sharp or hard objects.
- (8) Do not place heavy objects on the LCD display, video cable, or power cord.
- (9) Do not use abrasive cleaners, waxes or solvents for your cleaning.
- (10) Do not operate the product under the following conditions:
 - Extremely hot, cold or humid environment.
 - Areas containing excessive dust and dirt.
 - Near any appliance generating a strong magnetic field.
 - In direct sunlight.

2. Caution

No modification of any circuit should be attempted. Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guidelines.

3. Safety Check

Care should be taken while servicing this LCD display. Because of the high voltage used in the inverter circuit, the voltage is exposed in such areas as the associated transformer circuits.

4. LCD Module Handling Precautions

4.1 Handling Precautions

- (1) Since front polarizer is easily damaged, pay attention not to scratch it.
- (2) Be sure to turn off power supply when connecting or disconnecting input connector.
- (3) Wipe off water drops immediately. Long contact with water may cause discoloration or spots.
- (4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
- (5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
- (6) Since CMOS LSI is used in this module, take care of static electricity and ensure human earth when handling.
- (7) Do not open or modify the Module Assembly.
- (8) Do not press the reflector sheet at the back of the module in any direction.
- (9) In the event that a Module must be put back into the packing container slot after it was taken out of the container, do not press the center of the CCFL Reflector edge. Instead, press at the far ends of the CFL Reflector edge softly. Otherwise the TFT Module may be damaged.
- (10) At the insertion or removal of the Signal Interface Connector, be sure not to rotate or tilt the Interface Connector of the TFT Module.

- (11) After installation of the TFT Module into an enclosure (LCD monitor housing, for example), do not twist or bend the TFT Module even momentarily. When designing the enclosure, it should be taken into consideration that no bending/twisting forces may be applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.
- (12) The cold cathode fluorescent lamp in the LCD contains a small amount of mercury. Please follow local ordinances or regulations for disposal.
- (13) The LCD module contains a small amount of materials having no flammability grade. The LCD module should be supplied with power that complies with the requirements of Limited Power Source (IEC60950 or UL1950), or an exemption should be applied for.
- (14) The LCD module is designed so that the CCFL in it is supplied by a Limited Current Circuit (IEC60950 or UL1950). Do not connect the CCFL to a Hazardous Voltage Circuit.

B. Physical specification:

Overall dimension:	a. Height:	480.55mm.
	b. Width:	448.00mm.
	c. Depth:	266.65mm.
Weight:	a. Net weight:	8.5kg.
	b. Gross weight:	11.2kg.
Mechanical adjustment:	a. Tilt:	+25° ~ -5°.
	b. Swivel:	± 45°.
	c. Height adjust:	110mm.
	d. Pivot:	90°.
Packaging:	a. Carton dimension:	a. Height: 494mm.
		b. Width: 345mm.
		c. Depth: 560mm.
Accessories:	Power cable 1.8m. User guide (English). CD ROM. Warranty card. HD15 - HD15 cable. DVI (D) – DVI (D) cable.	

3. Regulatory & Standard certification.

Regulatory standards	UL, cUL, FCC-B, CB, CE, ENERGY, NOM, TUV/GS, TUV ERGO (covers ISO13406-2 & MPRII), TCO'03(for VP201s/VP2000s), TCO99 (for VP201b), NEMKO, SEMKO, DEMKO, FIMKO, GOST-R + 20 ORIGINAL COPIES HYGIENIC, (SASO), PCBC, VCCI, BSMI, CCC, (PSB), (C-TICK), TUV-S
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Note.1: Luminance variation:

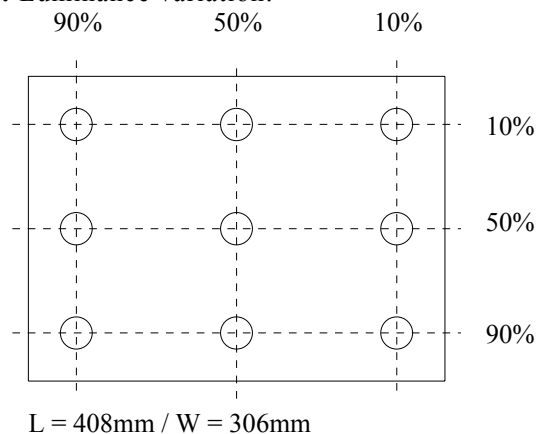


FIG.1 Luminance test points

$$BU = \frac{\text{MAX. Luminance in 9 point (1 ~ 9)}}{\text{MIN. Luminance in 9 point (1 ~ 9)}} < 1.54$$

C. OSD Menu Functions

1. Interface board function test.
 - 1.1 Function keys: Power, 1, ▲, ▼, 2.
 - 1.2 Basic function check.
 - 1.2.1 Input 1600x1200 / 60Hz, cross-hatch reverse pattern.
 - 1.2.2 Push “1” & “2” key, select Auto image adjust, Contrast, Brightness, Input select, Color, Manual image adjust, Setup menu, Memory recall function.
 - 1.2.3 Push “▲” or “▼” key check Contrast, Brightness, Input select, Color, H/V position, H size, Fine tune, Sharpness, Scaling Language Select, OSD Position OSD Timeout, OSD Background functions.
 - 1.2.4 Push “2” to cycle among Analog / DVI-A / DVI-D signals.
 - 1.2.5 When the OSD is not active, the “▲” and “▼” of buttons increase/decrease Contrast or Brightness.
2. Interface power test.
 - 2.1 The test point:
 - 2.1.1 TP251 = NA.
 - 2.1.2 TP252 = 5V ± 5%.
 - 2.1.3 TP253 = 18V ± 5%.
3. OSD function.

Auto Image Adjust²

Contrast/Brightness:
Contrast, Brightness.

Input Select:
D-Sub, DVI-A, DVI-D.

Color Adjust:
SRBG, 9300K, 6500K (default), 5400K, 5000K, User Color (R, G, B).

Information:
Resolution, Horizontal Frequency, Vertical Frequency, Model Number, Serial Number, Web Site.

Manual Image Adjust:
H./V. Position² (H. Position, V. Position), H. Size², Fine Tune²,
Scaling³ (Fill Screen, Fill Aspect Ratio⁴, 1:1).

Setup Menu:
Language:
English, French, German, Spanish, Italian, Finnish, Japanese, Traditional Chinese, Simplified Chinese.
Resolution Notice:
Enable, Disable.
Input Priority:
D-Sub, DVI-A, DVI-D, Auto Search.
OSD Position:
H. Position, V. Position.
OSD Timeout:
5SEC, 15SEC, 30SEC, 60SEC
OSD Background:
On, Off.

Memory Recall

Notes:

² These functions are not available in Digital mode; the item is faded out and can't be selected
When auto tuning, the image should not go blank.

³ These functions are not available in 1600x1200 mode; the item is faded out and can't be selected.

⁴ When the input signal's aspect ratio is 4:3, the "Fill Aspect ratio" function yields the same result as "Fill Screen".

D. Image Calibration

1 Initial Settings

- 1.1 Set contrast to 70% and brightness to 100%.
- 1.2 Input a 640x480 / 60Hz, 5-block (5-MOSAIC) pattern (input level 100IRE 0.7Vp-p), then activate the White Balance function.
Set SRBG/9300K / 6500K / 5400K / 5000K, R G B Gain as shown below:

	sRGB		9300K		6500K		5400K		5000K	
	Analog	DVI	Analog	DVI	Analog	DVI	Analog	DVI	Analog	DVI
R Gain	255	255	255	255	255	255	255	255	255	255
G Gain	255	255	255	255	255	255	255	255	255	255
B Gain	255	255	255	255	255	255	255	255	255	255

2. 9300K alignment:
 - 2.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
 - 2.2 Adjust R, G, and B Gain to meet following chromaticity spec:
 $9300K \rightarrow x = 0.283 \pm 0.005, y = 0.298 \pm 0.005, Y > 150\text{cd/m}^2$ (Both analog & DVI).
3. 6500K alignment:
 - 3.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
 - 3.2 Adjust R, G and B Gain to meet following chromaticity spec:
 $6500K \rightarrow x = 0.313 \pm 0.005, y = 0.329 \pm 0.005, Y > 200\text{cd/m}^2$ (Both analog & DVI).
4. 5400K alignment:
 - 4.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
 - 4.2 Adjust R, G, and B Gain to meet following chromaticity spec:
 $5400K \rightarrow x = 0.335 \pm 0.005, y = 0.350 \pm 0.005, Y > 180\text{cd/m}^2$ (Both analog & DVI).
5. 5000K alignment:
 - 5.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
 - 5.2 Adjust R, G and B Gain to meet following chromaticity spec:
 $5000K \rightarrow x = 0.346 \pm 0.005, y = 0.359 \pm 0.005, Y > 180\text{cd/m}^2$ (Both analog & DVI).
6. sRGB alignment:
 - 6.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
 - 6.2 Adjust R, G and B Gain to meet following chromaticity spec:
 $\text{sRGB} \rightarrow x = 0.313 \pm 0.005, y = 0.329 \pm 0.005, Y > 200\text{cd/m}^2$ (Both analog & DVI).
7. 64 grays and 16 grays pattern check:
 - 7.1 Input a 1600x1200 / 60Hz, 64 gray-level pattern at 100IRE, with brightness set to 100% and contrast set to 70%
 - 7.2 Verify that under the 9300K / 6500K / 5400K / 5000K settings, no more than 2 of the 64 grays are saturated.
 - 7.3 Input a 1600x1200 / 60Hz, 16 gray-level pattern at 100IRE, with brightness set to 100% and contrast set to 100%.
 - 7.4 Verify that under the 9300K / 6500K / 5400K / 5000K settings, no more than 4 of the 16 grays are saturated.

E. Image test

1. Picture size & position.

1.1 Picture size.

Input analog timing modes 1 ~ 26 and DVI timing modes 1 ~ 25:

H-size: 408mm \pm 1mm.

V-size: 306mm \pm 1mm.

(Extra 640x350)

1.2 Screen center.

a. 1600x1200: H \pm 1mm, V \pm 1mm.

b. Others modes: H \pm 1.5mm, V \pm 1mm.

1.3 Picture position (refer to FIG.2).

H-position: | g3-g4 | \leq 1.5mm.

V-position: | g1-g2 | \leq 1.5mm.

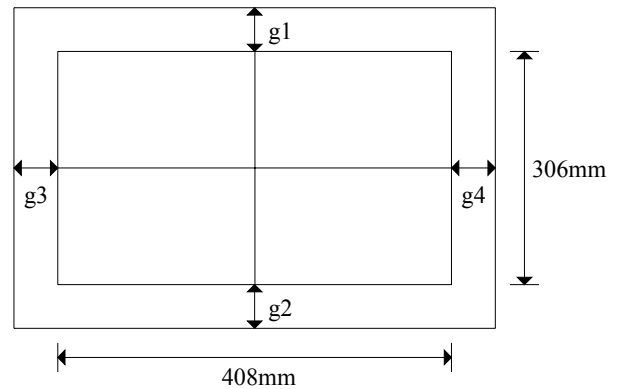


FIG. 2

2. Luminance test.

2.1 Input a 1600x1200 / 60Hz full white pattern at 100IRE with brightness set to 100% and contrast set to 70%.

Color temperature	x	y	Y (Luminance)	
			Analog	DVI
sRGB	0.313 \pm 0.01	0.329 \pm 0.01	>200 nit	>200 nit
9300K	0.283 \pm 0.01	0.298 \pm 0.01	>150 nit	>150 nit
6500K	0.313 \pm 0.01	0.329 \pm 0.01	>200 nit	>200 nit
5400K	0.335 \pm 0.01	0.350 \pm 0.01	>180 nit	>180 nit
5000K	0.346 \pm 0.01	0.359 \pm 0.01	>180 nit	>180 nit

2.2 Input a 1600x1200 / 60Hz full white pattern at 100IRE with brightness set to 100% and contrast set to 100%.

Color temperature	Y (Luminance)	
	Analog	DVI
9300K	>220 nit	>220 nit
6500K	>220 nit	>220 nit
5400K	>220 nit	>220 nit
5000K	>220 nit	>220 nit

3. Picture performance test.

3.1 Picture quality:

	Test pattern signal	The following image faults shall not be conspicuous:
1	100IRE white raster pattern	Seam, Noise, Beat, Flicker
2	Cross hatch pattern	Ringings, Overshoot, Smear, V-jitter, H-jitter
3	Color bar	Color distortion, Noise, Beat, Color tangent
4	Gray scale (16 steps)	Noise, Beat, Gamma distortion
5	1 dot ON / 1 dot OFF pattern	Noise, Flicker
6	40IRE gray raster	Noise, Beat, Gamma distortion

3.2 DVI performance test.

3.2.1 3.2.2 Test conditions:

- VG828 digital pattern generator.
- "TTL" DVI-D single link cable.

3.2.2 Test condition:

- a. Resolution: 1600x1200; refresh rate: 75KHz vertical / 60Hz horizontal.
- b. 16, 32, 64, and 256-level horizontal gray scales.
- c. 16, 32, 64, and 256-level vertical gray scales.

4. Shortcut keys and factory presets

4.1 Shortcut keys: Press the following keys to adjust settings directly, when the OSD is not active.

[1].	Main Menu.
[2].	Select next input. (Sequence: D-SUB \rightarrow DVI-A \rightarrow DVI-D)
[UP] or [DOWN] arrow.	Directly activate the Contrast menu. Switch to Brightness menu

	by pushing button [2].
[UP] + [DOWN] arrows.	Recall either Contrast or Brightness settings while the Contrast or Brightness adjustment OSD is active, or recall both Contrast and the OSD is not active.
[1] + [2].	Toggle 720x400 and 640x400 mode when input 720x400 or 640x400 mode.
[1] + [UP] + [DOWN].	White Balance (press and hold for 5 seconds).
[2] + [UP] + [DOWN].	Video Mirror Function
[1] + [DOWN].	Power Lock / Power Unlock (press and hold for 10 seconds).
[1] + [UP].	OSD Lock / OSD Unlock (press and hold for 10 seconds).
DC-Power + [2] + [UP].	Copy EDID to E ² PROM.
DC-Power + [1].	Factory mode. (Burn in mode on)
DC-Power + [2] + [DOWN].	Burn in mode on.
DC-Power + [UP] + [DOWN].	Burn in mode off.
DC-Power + [2].	All mode recall.
AC-Power on.	Enter ISP mode.

4.2 All mode recall settings:

Contrast	70%.
Brightness	100%.
Color Temperature	6500K.
Scaling	Full Screen.
Input Priority	Auto Search.
OSD H. Position	50%.
OSD V. Position	50%.
OSD Time Out	15 Sec
OSD Background	On
Resolution Notice	Enabled
720x400/640x400	720x400
User color.	50%.
Language.	English.
Clear burn in mode.	
Clear user mode table.	

4.3 Factory shipment settings:

- 4.3.1 Main power switch: Off.
- 4.3.2 AC power button: Off.
- 4.3.3 Others settings same as "All mode recall" settings.

5. Power management tests.

5.1 Power consumption test table:

Monitor status	LED color	Video signal	Power consumption	Recover time
Normal / Unstable / Warning	Green	Active	<73W	
Power save	Amber	Blank	<4W	5sec
Aging	Note	NA	<73W	
DC power off	Off	NA	<2W	
AC power off	Off	NA	-	

See note: Amber (0.5sec) → Green (0.5sec) → Amber (0.5sec) → Green (0.5sec)... continuously.

6. DDC test.

6.1 DDC / EDID specification compliance requirement.

The data that is transmitted shall be stored in the monitor in non-volatile memory, which is a requirement of the VESA EDID version 3.0 standard.

6.2 IC954 EEPROM data see Appendix-B item a.

6.3 For the EDID data see Appendix B. VP2000s analog & DVI-A are the same as item h. For the DVI-D input 1 see item i.

7. USB test (VP201s/b only)
 - 7.1 Use a USB test hub such as "UPT2 USB2.0 8-port tester" to test USB up stream and down stream transfers. Each port must pass the test.
 - 7.2 Use a PC to check the USB VID, which should be 0543, and the PID, which should be 1169.
 - 7.3 For USB test settings see Appendix E.
8. For auto alignment, it is necessary to execute the auto image adjust command for 3 DOS modes (640x350, 720x400, 640x400).

F. Analog and Digital timing chart.

Mode No.	1	2	3	4	5	6	7	8	9	10
Mode Name	TEXT 640 x 350	VGA 640 x 400	VESA 640 x 480	VESA 640 x 480	MAC 640 x 480	VESA 640 x 480	VESA 640 x 480	VESA 640 x 480	TEXT 720 x 400	VESA 800 x 600
Horizontal Freq.	31.468	31.468	24.688	31.469	35.000	37.861	37.500	43.269	31.469	35.156
Video clock Freq.	25.175	25.175	19.75	25.175	30.240	31.500	31.500	36.000	28.322	36.000
Sync. Polarity	+	—	—	—	—	—	—	—	—	+
H. total (Dots)	800	800	800	800	864	832	840	832	900	1024
H. sync. (Dots)	96	96	64	96	64	40	64	56	108	72
H. back porch (Dots)	48	48	80	48	96	128	120	80	54	128
H. active (Dots)	640	640	640	640	640	640	640	640	720	800
H. front porch (Dots)	16	16	16	16	64	24	16	56	18	24
Vertical Freq. (Hz)	70.087	70.087	49.673	59.940	66.667	72.809	75.000	85.008	70.087	56.250
Sync. Polarity	—	+	+	—	—	—	—	—	+	+
V. total (Lines)	449	449	497	525	525	520	500	509	449	625
V. sync. (Lines)	2	2	4	2	3	3	3	3	2	2
V. back porch (Lines)	60	35	10	33	39	28	16	25	35	22
V. active (Lines)	350	400	480	480	480	480	480	480	400	600
V. front porch (Lines)	37	12	3	10	3	9	1	1	12	1

Mode No.	11	12	13	14	15	16	17	18	19	20
Mode Name	VESA 800 x 600	VESA 800 x 600	VESA 800 x 600	VESA 800 x 600	MAC 832 x 624	VESA 1024 x 768	VESA 1024 x 768	XGA 1024 x 768	VESA 1024 x 768	VESA 1024 x 768
Horizontal Freq. (KHz)	37.879	48.077	46.875	53.674	49.727	48.363	56.476	58.099	60.023	68.677
Video clock Freq.	40.000	50.000	49.500	56.250	57.285	65.000	75.000	78.084	78.750	94.500
Sync. Polarity	+	+	+	+	—	—	—	—	+	+
H. total (Dots)	1056	1040	1056	1048	1152	1344	1328	1344	1312	1376
H. sync. (Dots)	128	120	80	64	64	136	136	136	96	96
H. back porch (Dots)	88	64	160	152	224	160	144	160	176	208
H. active (Dots)	800	800	800	800	832	1024	1024	1024	1024	1024
H. front porch (Dots)	40	56	16	32	32	24	24	24	16	48
Vertical Freq. (Hz)	60.317	72.188	75.000	85.061	74.553	60.004	70.069	72.082	75.029	84.997
Sync. Polarity	+	+	+	+	—	—	—	—	+	+
V. total (Lines)	628	666	625	631	667	807	806	806	800	808
V. sync. (Lines)	4	6	3	3	3	6	6	6	3	3
V. back porch (Lines)	23	23	21	27	37	29	29	29	28	38
V. active (Lines)	600	600	600	600	624	768	768	768	768	768
V. front porch (Lines)	1	37	1	1	3	3	3	3	1	1

Mode No.	21	22	23	24	25	26	27	28	29	30
Mode Name	APPLE 1152x 870	VESA 1280 x 960	VESA 1280 x 960	VESA 1280 x 1024	VESA 1280 x 1024	VESA 1280 x 1024	HDTV 1280 x 720	VESA 1600 x 1200		
Horizontal Freq. (KHz)	68.681	60.000	75.231	63.981	79.976	91.146	45.000	75.000		
Video clock Freq.	100.00	108.00	130.00	108.00	135.00	157.50	74.250	162.00		
Sync. Polarity	—	+	—	+	+	+	—	+		
H. total (Dots)	1456	1800	1728	1688	1688	1728	1650	2160		
H. sync. (Dots)	128	112	136	112	144	160	40	192		
H. back porch (Dots)	144	312	224	248	248	224	270	304		
H. active (Dots)	1152	1280	1280	1280	1280	1280	1280	1600		
H. front porch (Dots)	32	96	88	48	16	64	60	64		
Vertical Freq. (Hz)	75.062	60.000	74.857	60.020	75.025	85.024	60.000	60.000		
Sync. Polarity	—	+	+	+	+	+	—	+		
V. total (Lines)	915	1000	1005	1066	1066	1072	750	1250		
V. sync. (Lines)	3	3	4	3	3	3	5	3		
V. back porch (Lines)	39	36	38	38	38	44	20	46		
V. active (Lines)	870	960	960	1024	1024	1024	720	1200		
V. front porch (Lines)	3	1	3	1	1	1	5	1		

Appendix B: DDC contents.

a. 128 bytes of EDID code for VP2000s analog.

	0	1	2	3	4	5	6	7	8	9
0	00	FF	FF	FF	FF	FF	FF	00	5A	63
10	1A	23	01	01	01	01	01	0E	01	03
20	0E	29	1F	78	2E	60	E5	A3	57	4B
30	9C	25	11	50	54	BF	EF	80	A9	40
40	01	01	81	80	81	40	71	4F	61	59
50	45	59	31	59	48	3F	40	30	62	B0
60	32	40	40	C0	13	00	98	32	11	00
70	00	1E	00	00	00	FF	00	50	39	34
80	30	34	30	31	30	30	30	30	31	0A
90	00	00	00	FD	00	32	55	1E	5C	11
100	00	0A	20	20	20	20	20	20	00	00
110	00	FC	00	56	50	32	30	30	30	73
120	0A	20	20	20	20	20	00	1F		

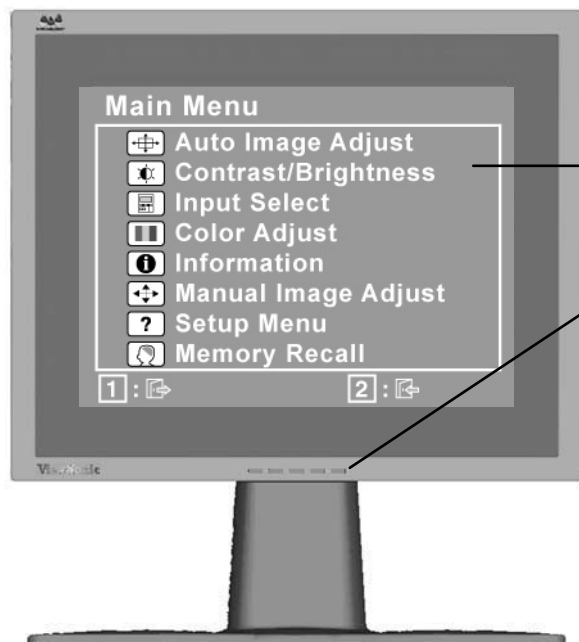
i. 128 bytes of EDID code for VP2000s digital.

	0	1	2	3	4	5	6	7	8	9
0	00	FF	FF	FF	FF	FF	FF	00	5A	63
10	1A	23	01	01	01	01	01	0E	01	03
20	80	29	1F	78	2E	60	E5	A3	57	4B
30	9C	25	11	50	54	BF	EF	80	A9	40
40	81	80	81	40	71	4F	61	59	45	59
50	31	59	31	0A	48	3F	40	30	62	B0
60	32	40	40	C0	13	00	98	32	11	00
70	00	1E	00	00	00	FF	00	50	39	34
80	30	34	30	31	30	30	30	30	31	0A
90	00	00	00	FD	00	32	55	1E	5C	11
100	00	0A	20	20	20	20	20	20	00	00
110	00	FC	00	56	50	32	30	30	30	73
120	0A	20	20	20	20	20	00	74		

3. Front Panel Function Control Description

Adjusting the Screen Image

Use the buttons on the front control panel to display and adjust the OnView® controls which display on the screen. The OnView controls are explained at the top of the next page and are defined in “Main Menu Controls” on page 15.



Main Menu
with OnView controls

**Front Control Panel
shown below in detail**

Displays the Main Menu
or exits the control screen
and saves adjustments.

Scrolls through menu options and
adjusts the displayed control.

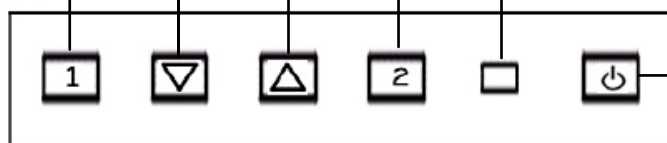
Also a shortcut to display the
Contrast adjustment control
screen.

Displays the control
screen for the highlighted
control.

Also toggles between two
controls on some
screens.

Also a shortcut to toggle
analog and digital connection.

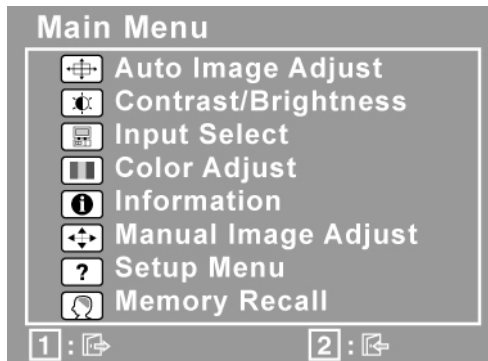
Power light
Green = ON
Orange = Power
Saving



Power
On/Off

Do the following to adjust the screen image:

- 1 To display the Main Menu, press button [1].



NOTE: All OnView menus and adjustment screens disappear automatically after about 30 seconds.

- 2 To select a control to be adjusted, press ▲ or ▼ to scroll up or down in the Main Menu.
- 3 When the desired control is selected, press button [2].
- 4 To adjust the control, press the up ▲ or down ▼ buttons.
- 5 To save the adjustments and exit the menu, press button [1] *twice*.

The following tips may help you optimize your display:

- Adjust the computer's graphics card so that it outputs a video signal 1600 x 1200 @ 60 Hz to the LCD display. (Look for instructions on "changing the refresh rate" in your graphics card's user guide.)
- If necessary, make small adjustments using H POSITION and V POSITION until the screen image is completely visible. (The black border around the edge of the screen should barely touch the illuminated “active area” of the LCD display.)

Main Menu Controls

Adjust the menu items shown below by using the up ▲ and down ▼ buttons.

Control	Explanation
---------	-------------



Auto Image Adjust automatically sizes, centers, and fine tunes the video signal to eliminate waviness and distortion.

Press the [2] button to execute the Auto Image Adjust function.

NOTE: Auto Image Adjust works with most common video cards. If this function does not work on your LCD display, then lower the video refresh rate to 60 Hz and set the resolution to its pre-set value.



Contrast adjusts the difference between the image background (black level) and the foreground (white level).



Brightness adjusts background black level of the screen image.

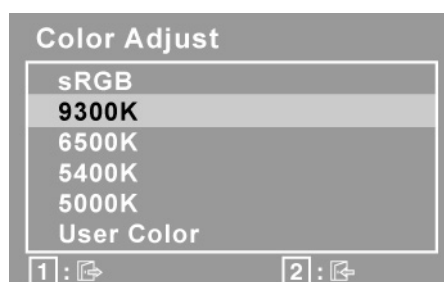


Input Select allows the user to toggle between analog and digital input signals.



Color Adjust provides several color adjustment modes, including preset color temperatures and RGB mode which allows red (R), green (G), and blue (B) to be adjusted independently.

The factory setting for this product is 6500K (6500 Kelvin).



sRGB — sRGB is quickly becoming the industry standard for color management, with support being included in many of the latest applications. Enabling this setting allows the LCD display to more accurately display colors the way they were originally intended. Enabling the sRGB setting will cause the Contrast and Brightness adjustments to be disabled.

9300K — Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting).

6500K — Adds red to the screen image for warmer white and richer red.

Control Explanation

5400K — Adds green to the screen image for a darker color.

5000K — Adds blue and green to the screen image for a darker color.

User Color — Individual adjustments for red (R), green (G), and blue (B).

1 To select color (R, G or B) press button [2].

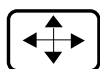
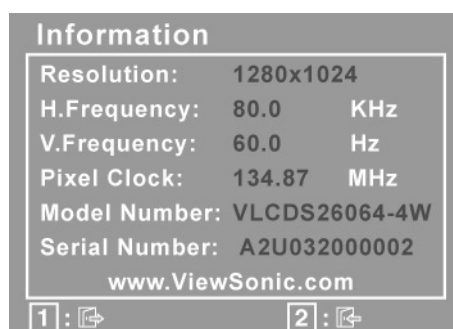
2 To adjust selected color, press ▲ or ▼.

Important: If you select RECALL from the Main Menu when the product is set to a Preset Timing Mode, colors return to the 6500K factory preset.

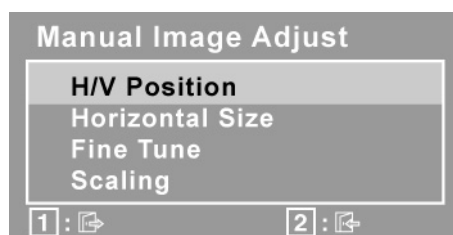


Information displays the timing mode (video signal input) coming from the graphics card in your computer. See your graphics card's user guide for instructions on changing the resolution and refresh rate (vertical frequency).

NOTE: VESA 1600 x 1200 @ 60 Hz (recommended) means that the resolution is 1600 x 1200 and the refresh rate is 60 Hertz.



Manual Image Adjust displays the Manual Image Adjust menu.



The **Manual Image Adjust** controls are explained below:

Horizontal Position moves the screen image left or right.

Vertical Position moves the screen image up or down.

Horizontal Size adjusts the width of the screen image.

Control Explanation

Fine Tune sharpens the image by aligning the video signal phase with display pixels.

Scaling adjusts a video input signal at a resolution other than 1600 x 1200 to the native screen size using the following options:

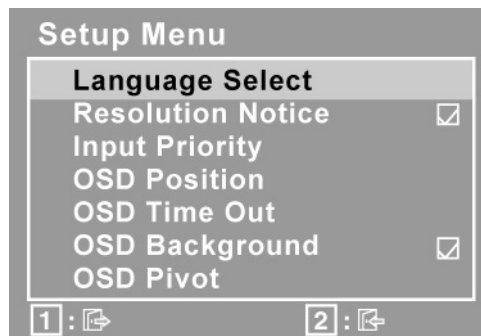
1:1 adjusts the video signal so that the height and width of the picture are the same.

Fill all adjusts the video signal to fill the screen.

Fill Aspect Ratio maintains the correct video signal proportions for different resolutions.



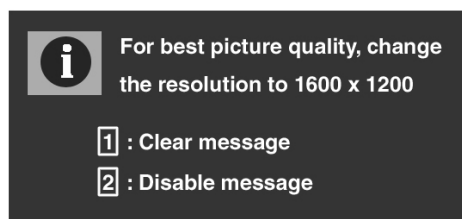
Setup Menu displays the menu shown below.



The **Setup Menu** controls are explained below:

Language allows the user to choose the language used in the menus and control screens.

Resolution Notice displays the Resolution Notice menu shown below.



Resolution Notice advises the optimal resolution to use.

Input Priority If multiple computers will be connected to the display, this function can be used to select which input signal has priority. The display will do a one time detection for available inputs when first powered on and choose among the available signals bas on the selected Input Priority.

Control	Explanation
---------	-------------



OSD Position allows the user to move the on-screen display menus and control screens.

OSD Timeout sets the length of time an on-screen display screen is displayed. For example, with a "15 second" setting, if a control is not pushed within 15 seconds, the display screen disappears.

OSD Background allows the user to turn the On-Screen-Display background on or off.

OSD Pivot This function is used to rotate the OSD menu, when the display is changed from Landscape to Portrait mode.



Memory Recall returns adjustments to the original factory settings if the display is operating in a factory Preset Timing Mode listed in this user guide.

Exception: This control does not affect changes made with the User Color control.

4. Circuit Description

4.1 Power supply (DC/DC Converter):

4.1.1 IC251 BA9741 is a switching regulator controller that uses a PWM method. It is used for DC to DC step-down conversion. It converts 24V DC into regulated and stable output voltages of 18V and 5V.

4.1.2 Regulator:

IC252 converts 5V into regulated and stable O/P 3.3V.

IC253 converts 5V into regulated and stable O/P 1.8V.

IC255 converts 5V into regulated and stable O/P 3.3V.

IC256 converts 5V into regulated and stable O/P 2.5V

4.2 DDC data select:

4.2.1 IC601 (AT24C02) saves D-SUB DDC data.

4.2.2 IC604 (AT24C02) saves DVI-D, DDC data.

4.2.3 IC605 (AT24C02) saves DVI-A, DDC data.

4.3 D-sub and DVI-A signal select

The VP231wb is equipped with two analog signal inputs: D-sub and DVI-A. The user may only choose to display the signal from one of these ports: D-sub or DVI-A.

IC607 (AD8186) is a R, G, B signal switch IC. If the control signal (RGBSEL) is high, the device will display the DVI-A signal. If the control signal (RGBSEL) is low, the device will display the D-sub signal.

4.4 Scalar

The gm1601H is a dual channel graphics and video processing IC for Liquid Crystal Display (LCD) monitors and televisions incorporating Picture in Picture, up to WUXGA output resolutions. The gm1601H provides all key IC functions required for image capture, processing and display timing control. On-chip functions include a high speed triple-ADC and PLL, Ultra-Reliable DVI receiver, high quality zoom, and shrink scaling engines, Motion Adaptive De-interlacing (MADI), Low Angle Diagonal Interpolation (LADI), an on-screen display (OSD) controller, a 100MHz on-chip X186 micro-controller (OCM), and a selectable double side TTL or dual channel LVDS transmitter for interface to displays.

4.5 USB(VP201s/b only)

IC951(USB20H04) is a 4-Port USB 2.0 Hub controller. It is compliant with the USB 2.0 specification, enables bus-powered Hi-Speed hub design, and is compatible with On-The-Go (OTG) USB devices.

It is equipped with a serial interface for configuration from EEPROM or micro-controller when the default settings are not used. Includes integrated termination and pull-up/pull-down resistors, as well as internal short circuit protection of DP and DM lines. Supports individual or ganged over-current protection and power control.

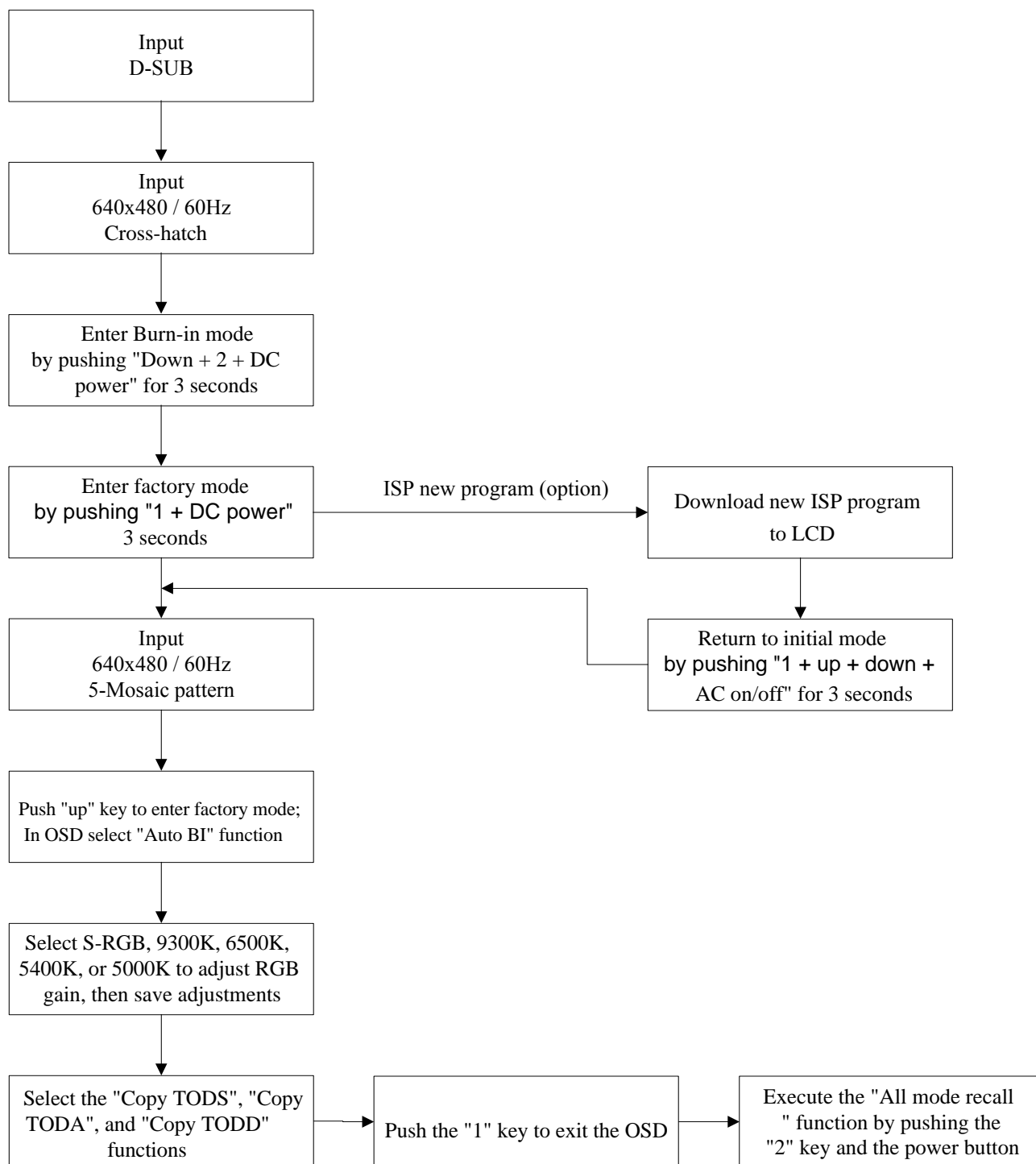
5. Adjustment Procedure

5.1 General.

1. All specifications must be met over line voltage range of 90V_{AC} to 264V_{AC} 50Hz / 60Hz, unless otherwise specified.
2. Operating temperature range is 0°C to 40°C with a relative humidity of 10% or less to 80%.
3. The monitor must be operational in a usable state within 30 minutes after turn-on.
4. All signal levels are measured assuming termination at the monitor's input jacks or in its characteristic impedance.
5. All controls must have excess range (no control may be left at an end stop when proper alignment is completed).
6. The monitor is not required to meet specs under the following circumstances, but must tolerate without damage to the LCD or circuits any sequence or combination of: Power on and off, signal on and off, erratic or incorrect frequency, noisy inputs, any possible combination of unplugging of power or signal cables, or any setting of user accessible controls. Likewise, the monitor should survive extended periods of operation with line voltage reduced below the specified minimum.
7. An isolation transformer should be used when performing alignment and tests. Portions of the power supply board are hot ground. The remaining boards are cold ground.
8. Ambient condition:
 - 8.1 Illumination: In usual inspection of electric performance and mechanical performance, it shall be 150 ~ 260lux.
 - 8.2 Environmental noise: Less than 60dB.
 - 8.3 Interference of EMI: The inspection shall be carried out in a place where the set is not disturbed by excessive external electric waves or magnetic fields.
 - 8.4 Temperature: $24 \pm 2^{\circ}\text{C}$.
 - 8.5 Humidity: $65 \pm 20\%$.

5.2 Instrument alignment.

5.2.1 Adjustment procedure.



5.2.2 Video alignment.

5.2.2.1 Initial Conditions

- 5.2.2.1.1 Set the contrast to 70% and set brightness to 100%.
- 5.2.2.1.2 Input a 640x480 / 60Hz 5-block (5-MOSAIC) pattern (input level 100IRE 0.7Vp-p), then adjust the white balance.

Set SRBG/9300K / 6500K / 5400K / 5000K, R G B Gain as shown below:

	sRGB		9300K		6500K		5400K		5000K	
	Analog	DVI	Analog	DVI	Analog	DVI	Analog	DVI	Analog	DVI
R Gain	255	255	255	255	255	255	255	255	255	255
G Gain	255	255	255	255	255	255	255	255	255	255
B Gain	255	255	255	255	255	255	255	255	255	255

5.2.2.2 9300K alignment:

- 5.2.2.2.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
- 5.2.2.2.2 Adjust R, G, and B Gain to meet following chromaticity spec:
9300K $\rightarrow x = 0.283 \pm 0.005$, $y = 0.298 \pm 0.005$, $Y > 150\text{cd/m}^2$ (Both analog & DVI).

5.2.2.3 6500K alignment:

- 5.2.2.3.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
- 5.2.2.3.2 Adjust R, G and B Gain to meet following chromaticity spec:
6500°K $\rightarrow x = 0.313 \pm 0.005$, $y = 0.329 \pm 0.005$, $Y > 200\text{cd/m}^2$ (Both analog & DVI).

5.2.2.4 5400K alignment:

- 5.2.2.4.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
- 5.2.2.4.2 Adjust R, G, and B Gain to meet following chromaticity spec:
5400K $\rightarrow x = 0.335 \pm 0.005$, $y = 0.350 \pm 0.005$, $Y > 180\text{cd/m}^2$ (Both analog & DVI).

5.2.2.5 5000K alignment:

- 5.2.2.5.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
- 5.2.2.5.2 Adjust R, G and B Gain to meet following chromaticity spec:
5000°K $\rightarrow x = 0.346 \pm 0.005$, $y = 0.359 \pm 0.005$, $Y > 180\text{cd/m}^2$ (Both analog & DVI).

5.2.2.6 sRGB alignment:

- 5.2.2.6.1 Input 1600x1200 / 60Hz & full white pattern at 100IRE.
- 5.2.2.6.2 Adjust R, G and B Gain to meet following chromaticity spec:
sRGB $\rightarrow x = 0.313 \pm 0.005$, $y = 0.329 \pm 0.005$, $Y > 200\text{cd/m}^2$ (Both analog & DVI).

5.2.2.7 64 grays and 16 grays pattern check:

- 5.2.2.7.1 Input a 1600x1200 / 60Hz, 64 gray-level pattern at 100IRE, with brightness set to 100% and contrast set to 70%
- 5.2.2.7.2 Verify that under the 9300K / 6500K / 5400K / 5000K settings, no more than 2 of the 64 grays are saturated.
- 5.2.2.7.3 Input a 1600x1200 / 60Hz, 16 gray-level pattern at 100IRE, with brightness set to 100% and contrast set to 100%.
- 5.2.2.7.4 Verify that under the 9300K / 6500K / 5400K / 5000K settings, no more than 4 of the 16 grays are saturated.

5.3 VP2000s Firmware Download Procedure (Gm1601 serial)

5.3.1 Set LCD Monitor to Burn In mode (Down key + 2 key +DC power on).

5.3.2 Set LCD Monitor to Factory mode (1 key + DC power on).

5.3.3 Enter Factory Mode (Press up key).

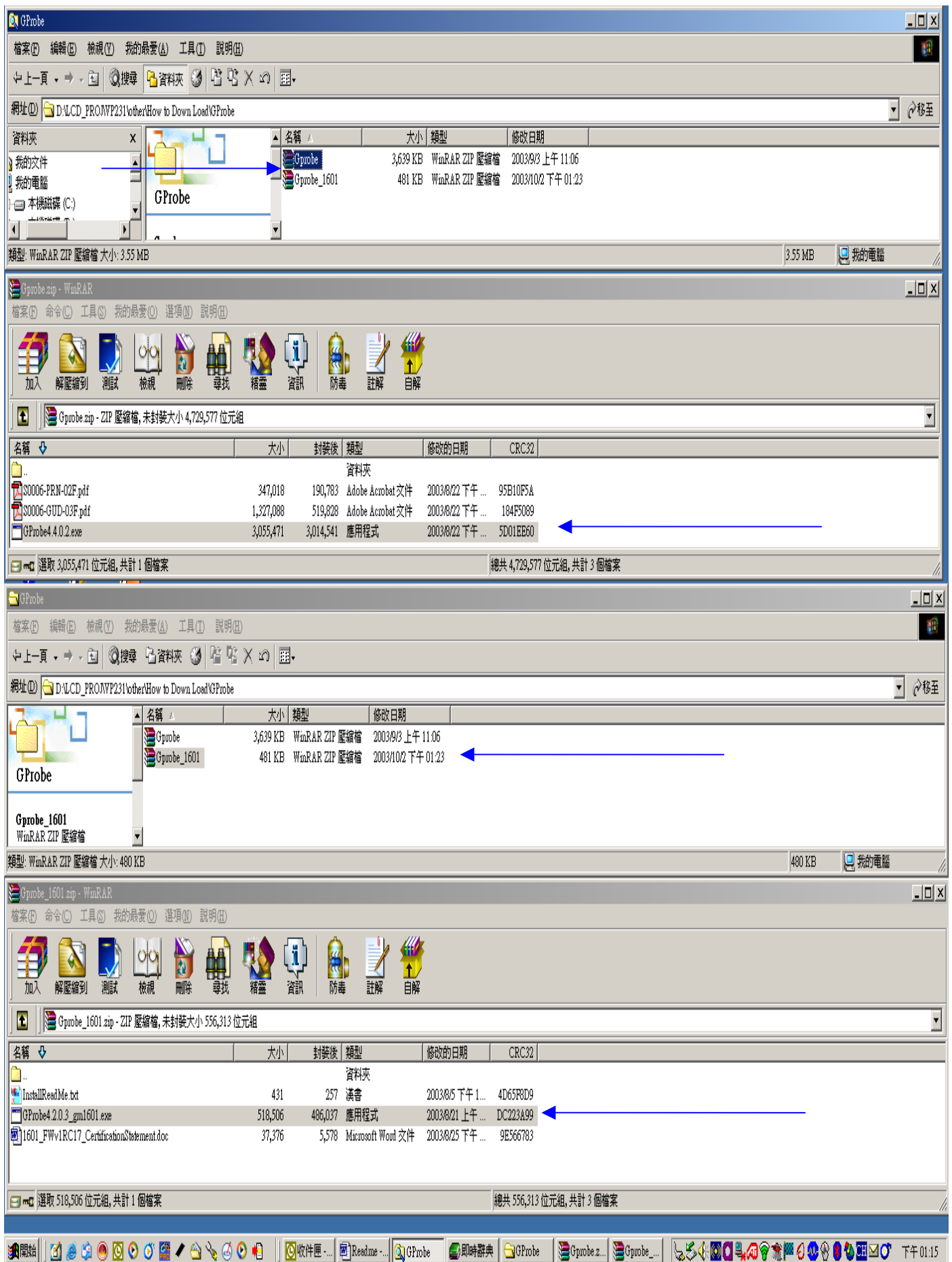
5.3.3.1 Set the color temperature mode to sRGB and press the 2 Key.
The R, G, B, Gain value will be adjusted; note the values.

5.3.3.2 Repeat for each color temperature..

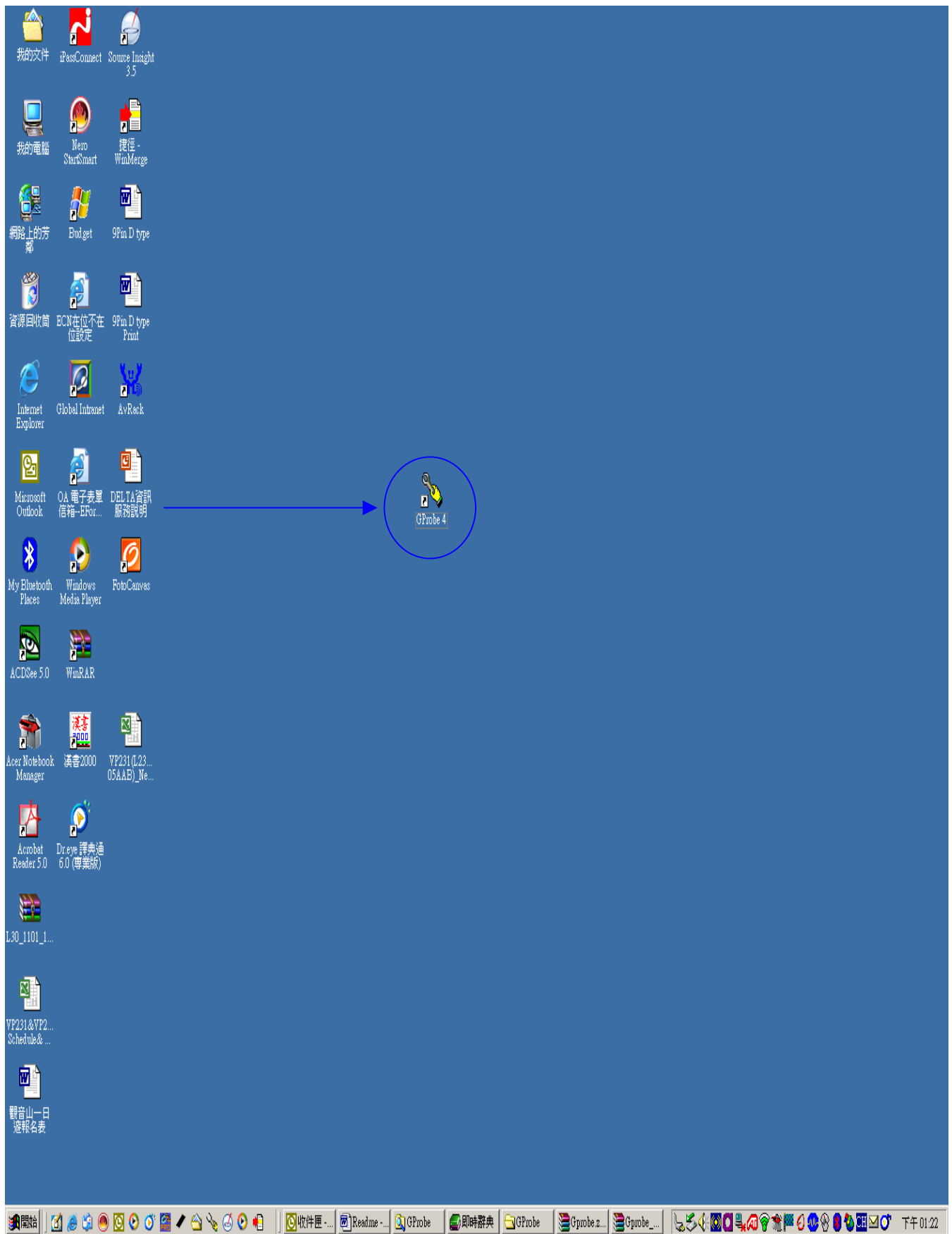


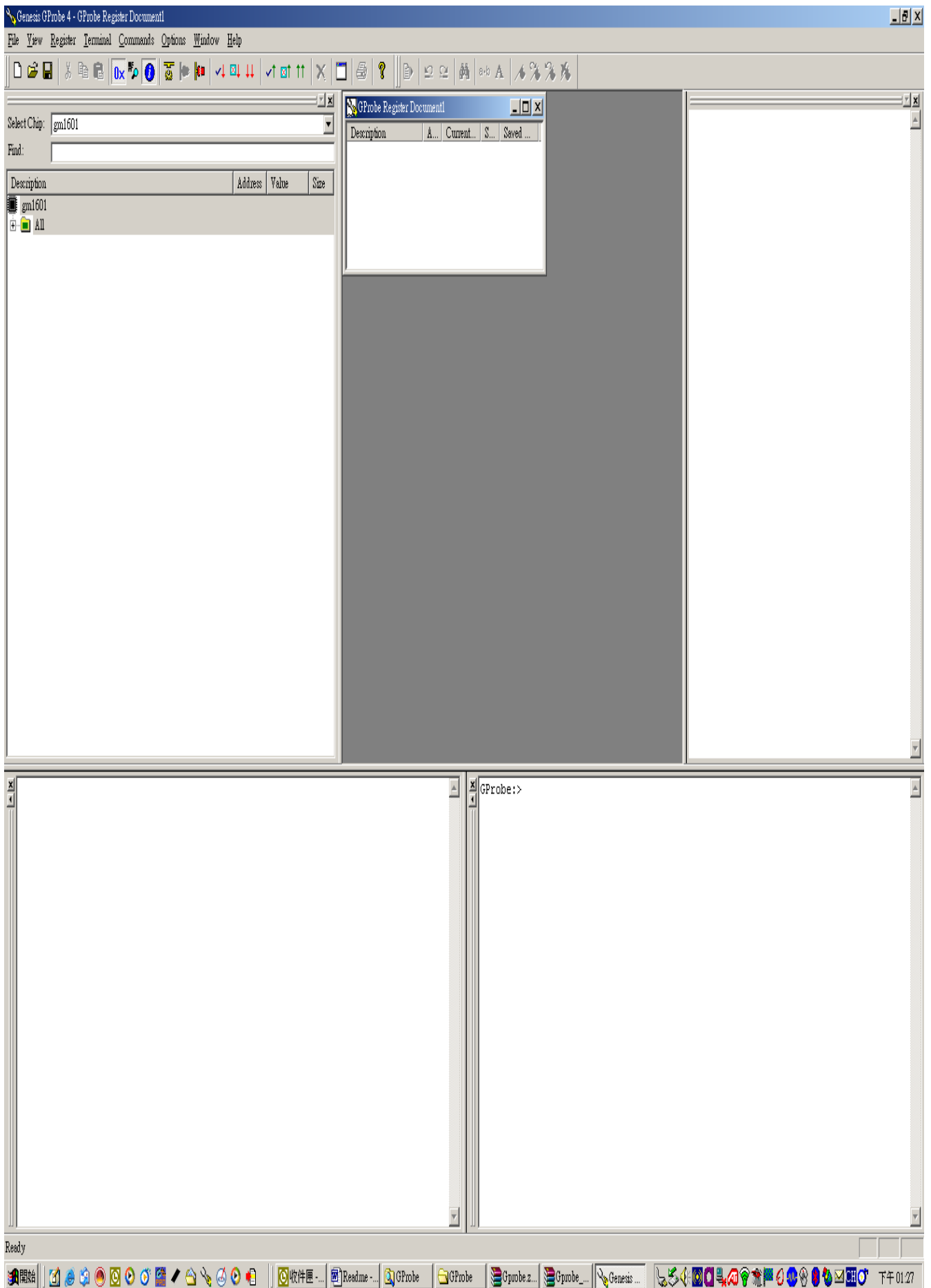
5.3.4 Install Gprobe

5.3.5 Install Gprobe_1601



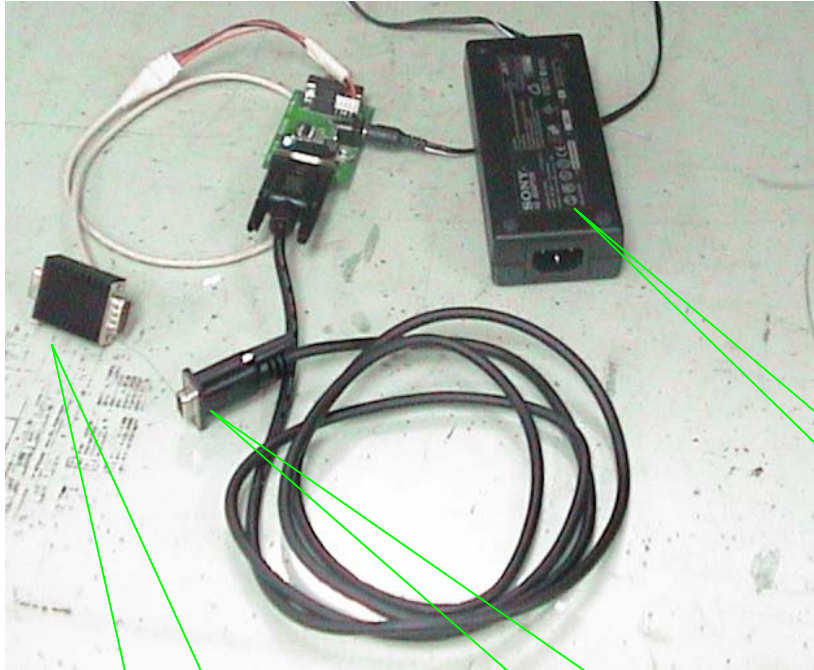
5.3.6 Click Gprobe 4





5.3.7 Connect ISP Tool

5.3.7.1 ISP Tools

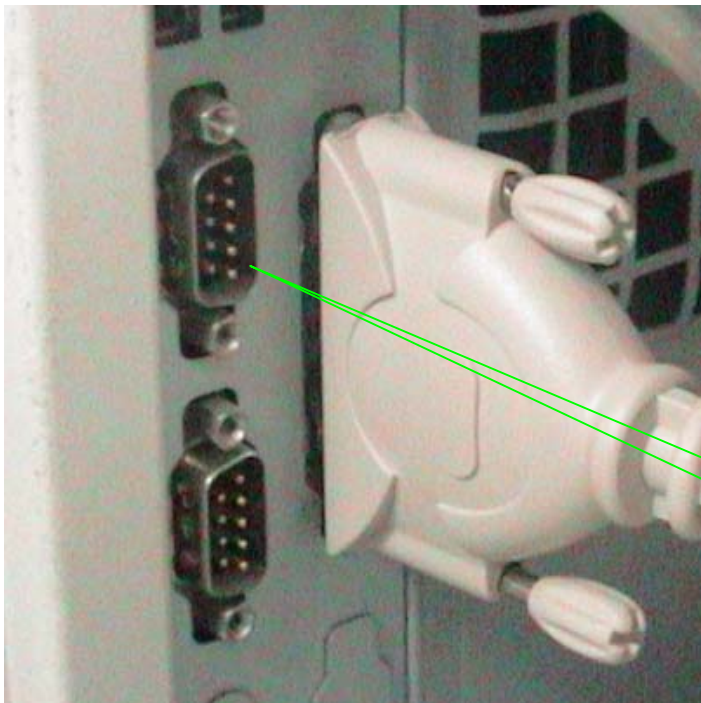


Connect to D-Sub

Connect to COM 1

Output 12V

5.3.7.2 Connect ISP Tool to “COM1”

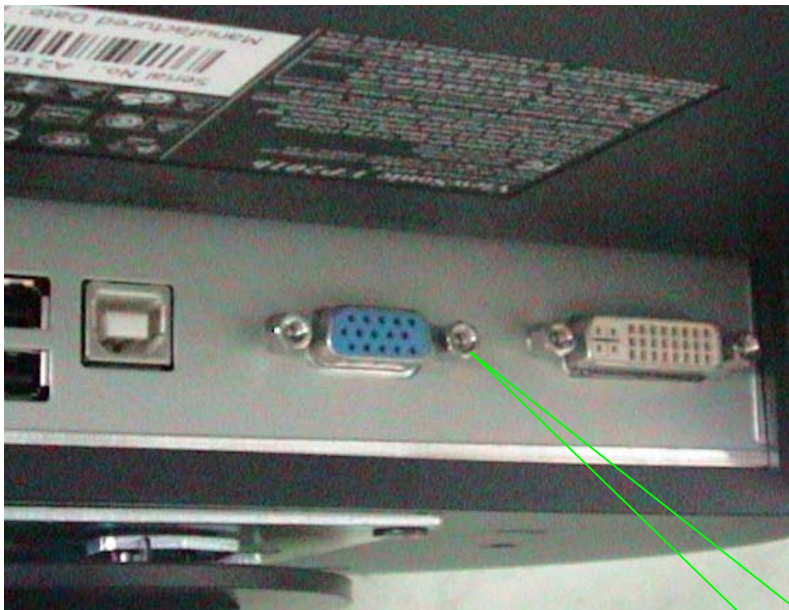


COM port

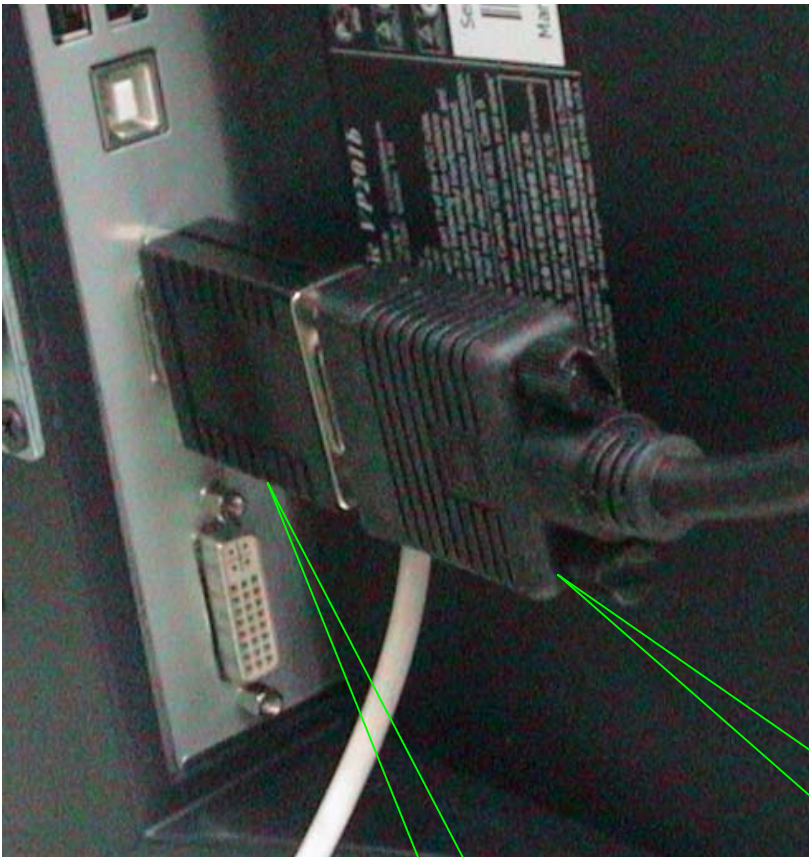


Connect to COM 1

5.3.7.3 Connect ISP Tool to “Display”



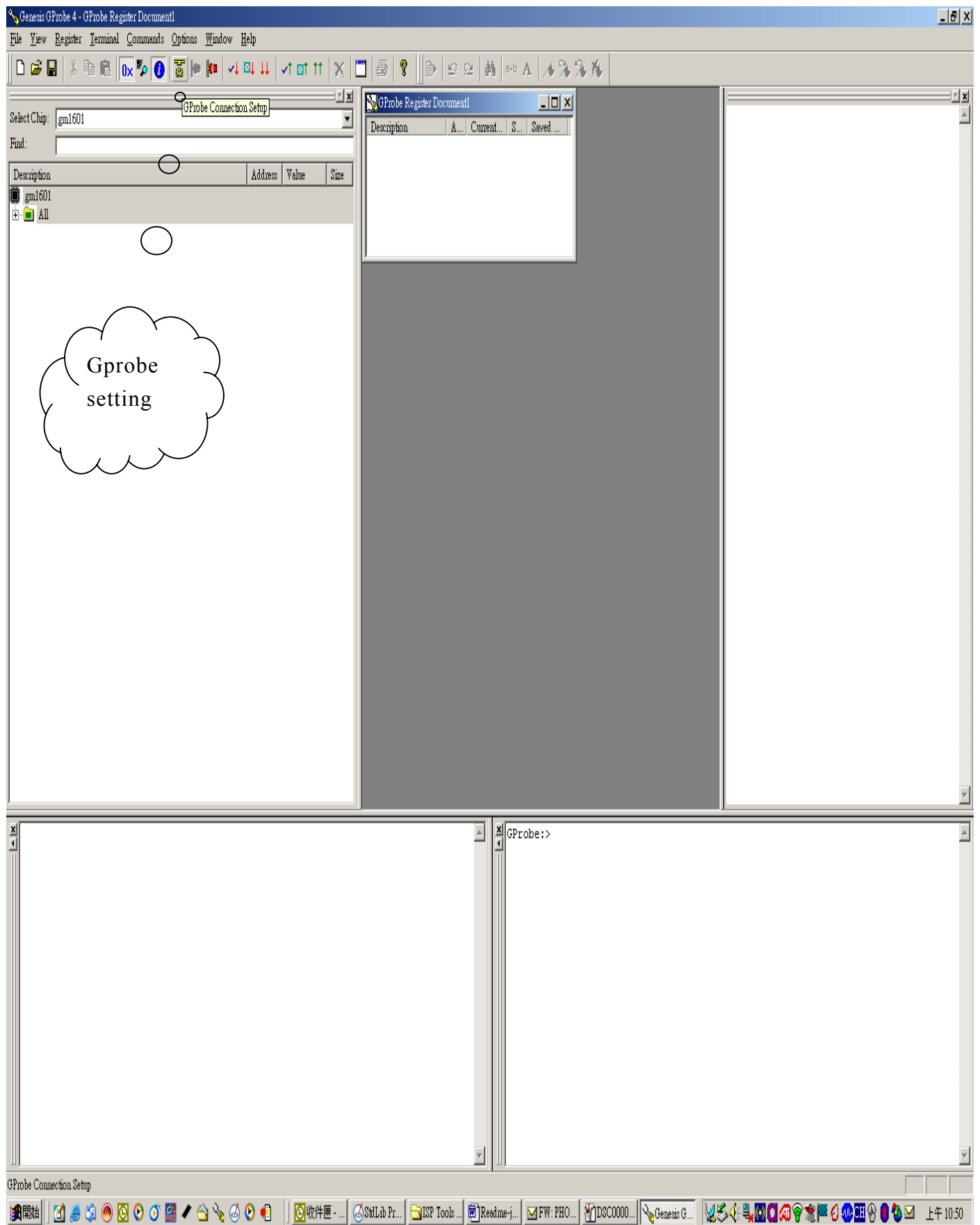
D-Sub

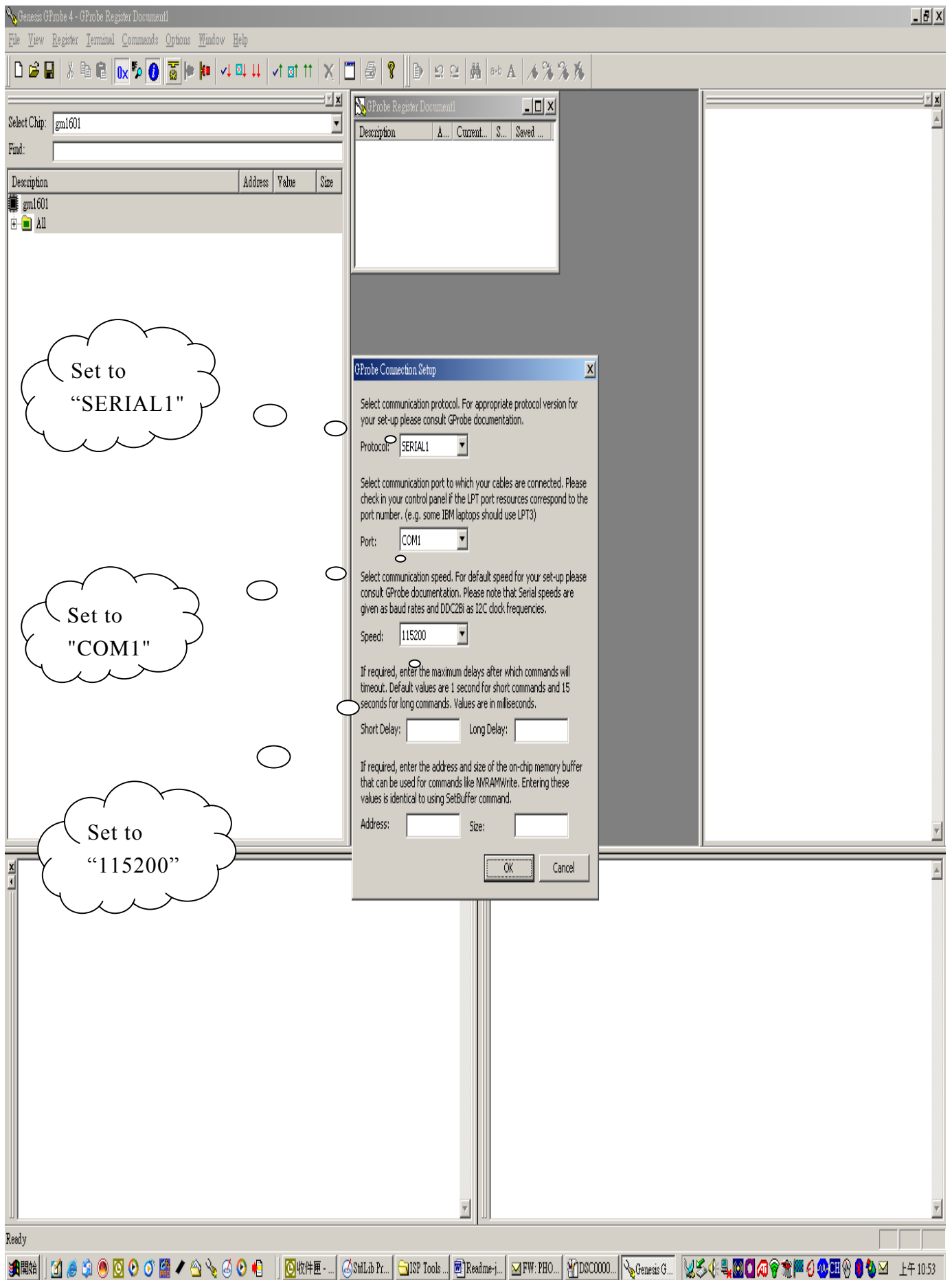


Signal cable

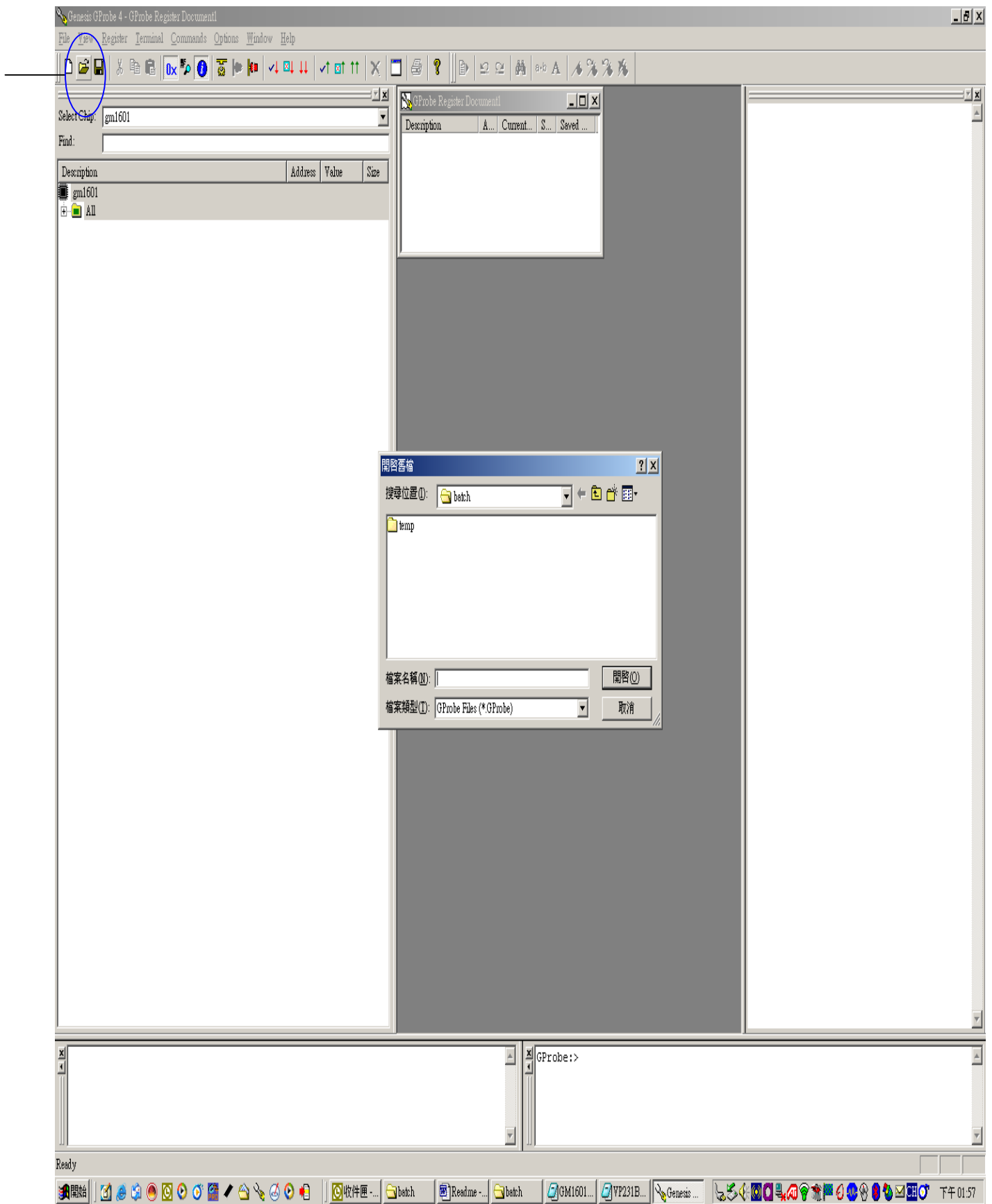
Connect to D-Sub

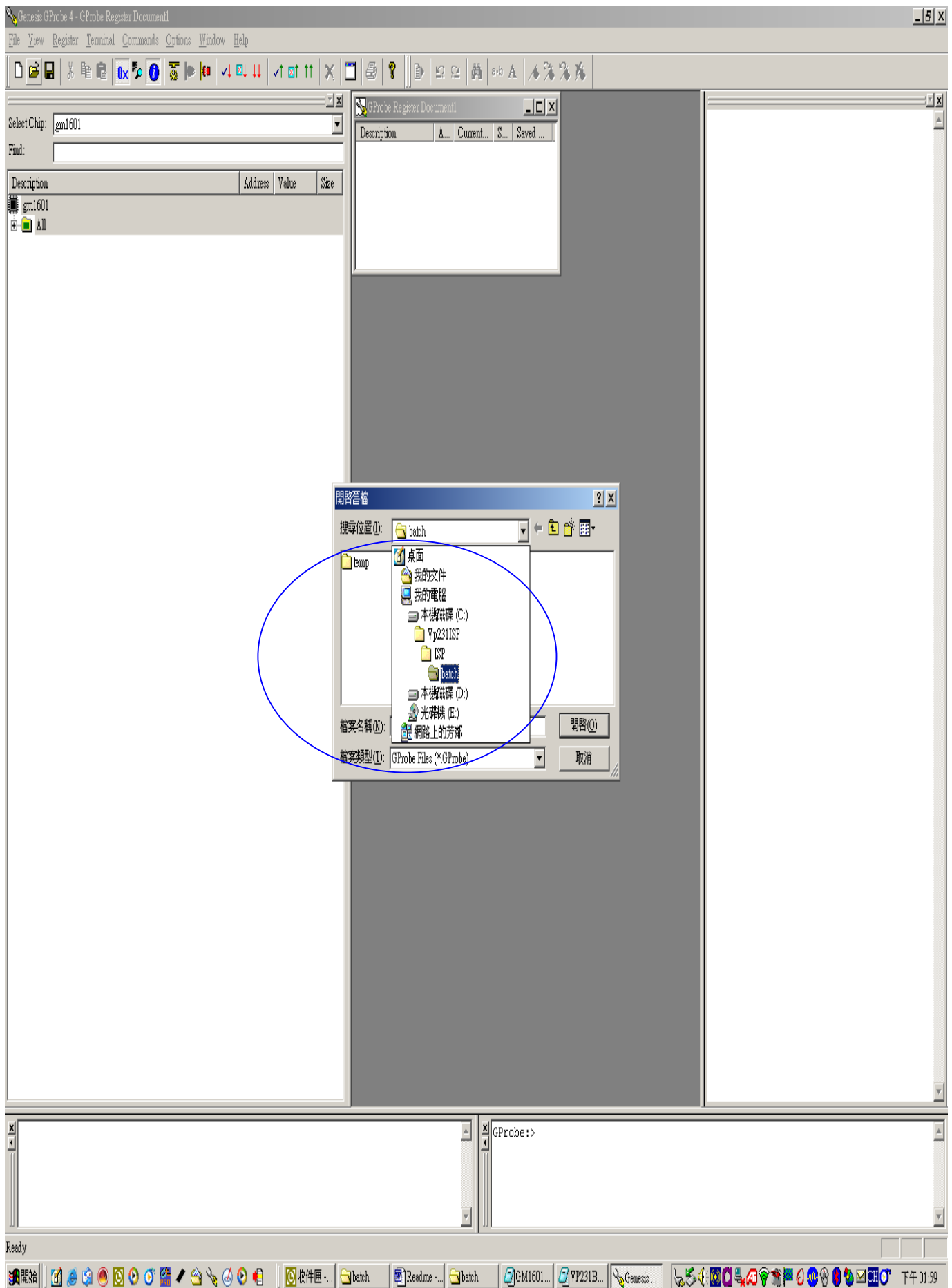
5.3.8 Confirm connection setup



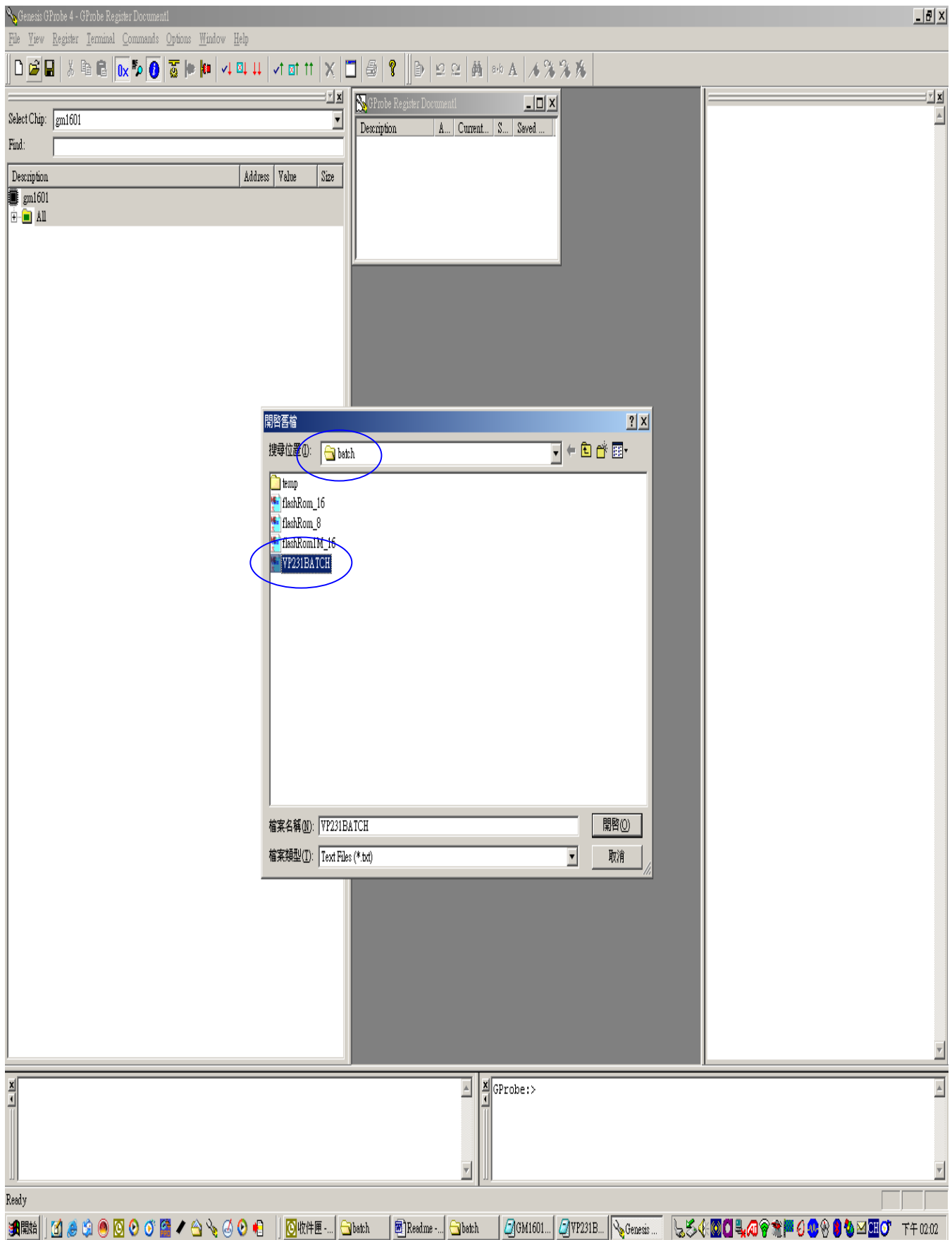


5.3.8.1 Open BATCH file in Gprobe 4

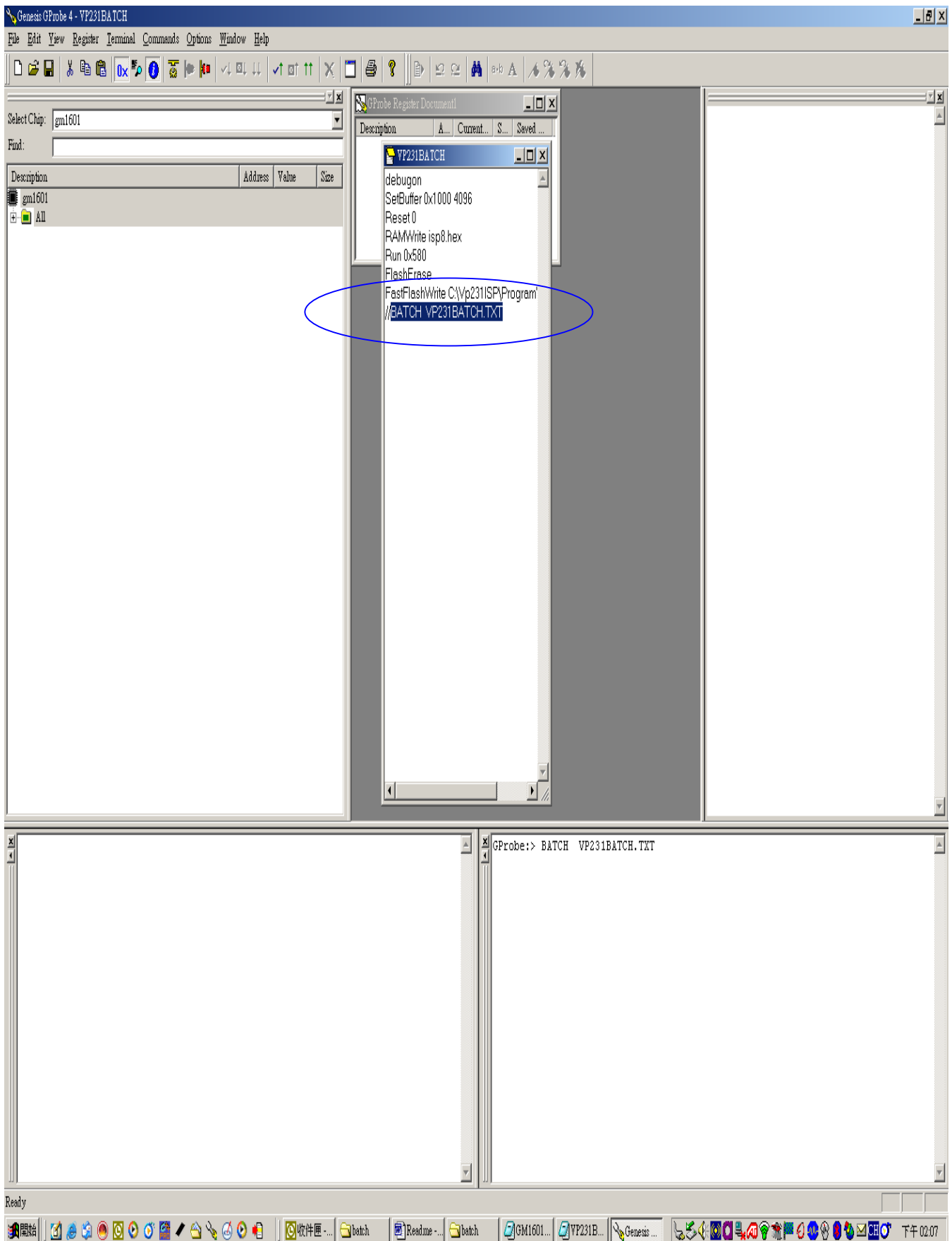




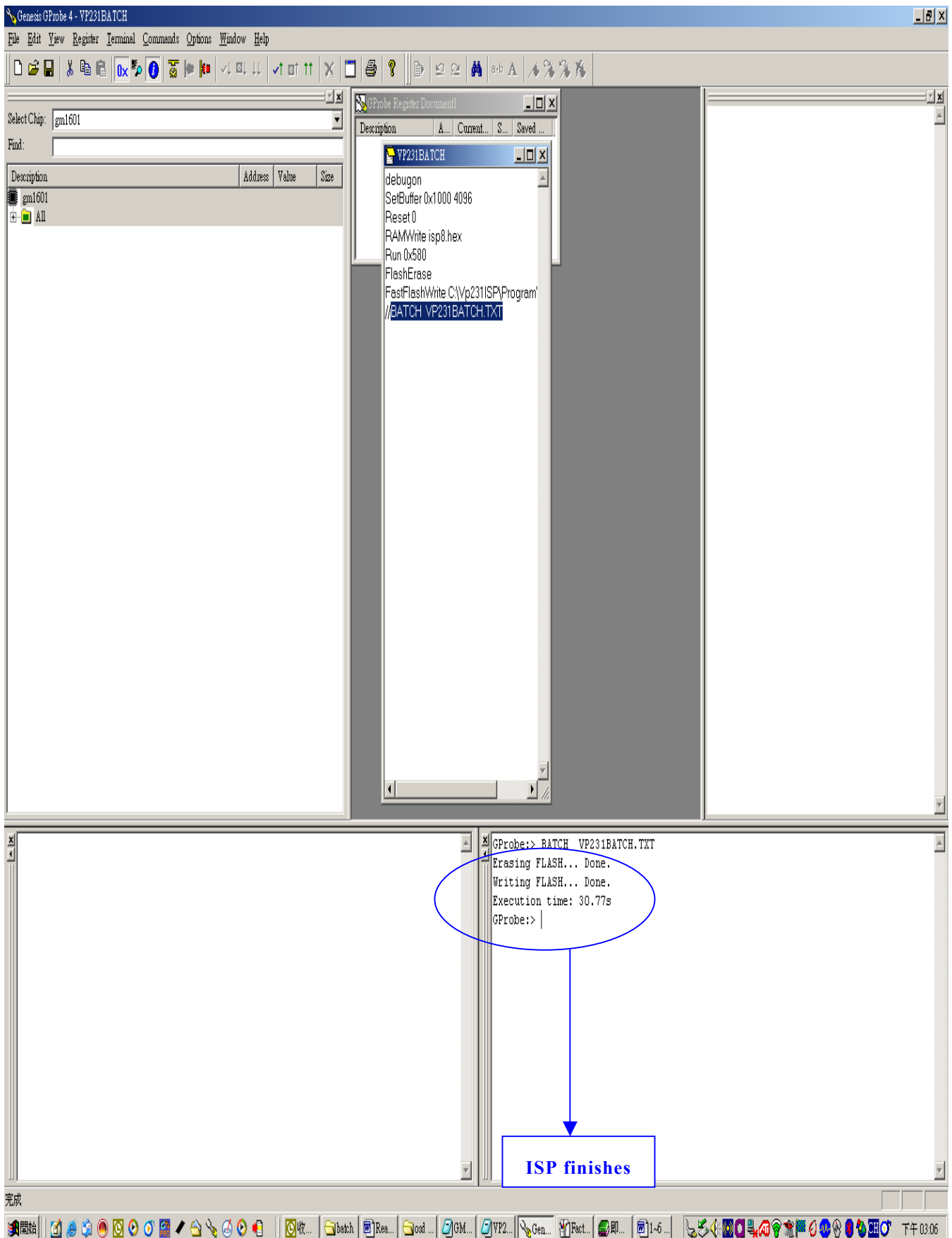
5.3.9 Open VP2000BATCH



5.3.10 Key in "BATCH VP2000BATCH.TXT"



5.3.11 Press Enter key



5.3.12 Remove ISP tool

5.3.13 EEPROM initial (1key + up key + down key + AC Power off/on)

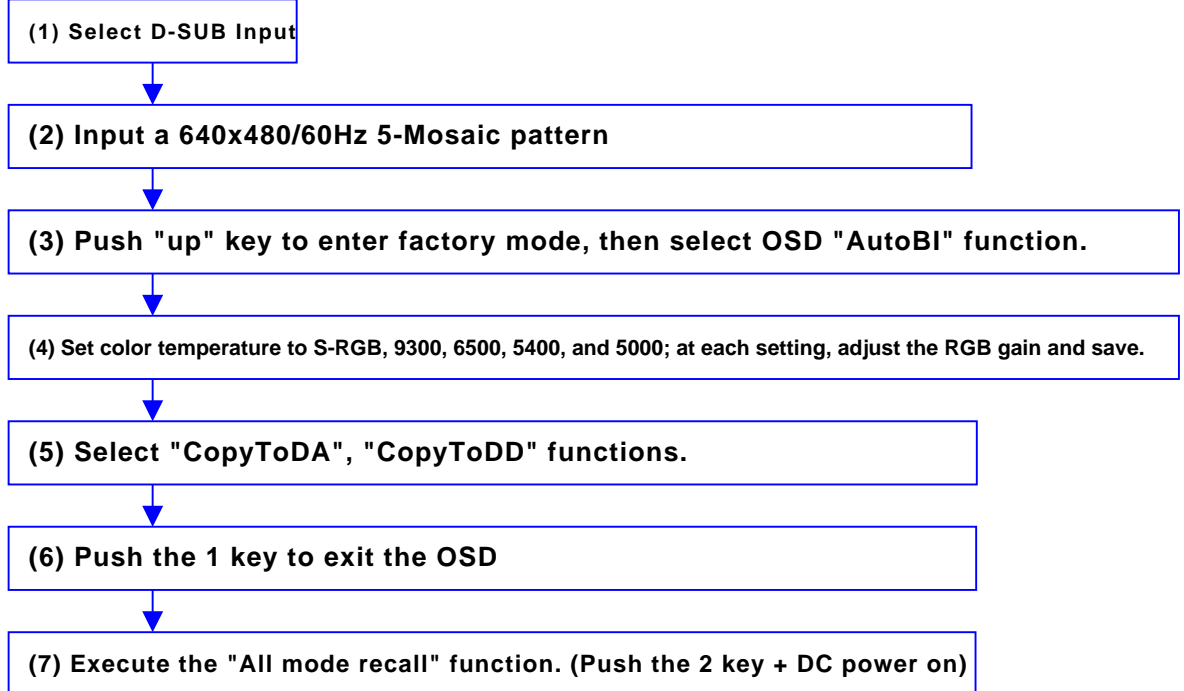
5.3.14 Execute Auto White Balance.

5.3.14.1 Set LCD Monitor to Burn In mode (Down key + 2 key +DC power on).

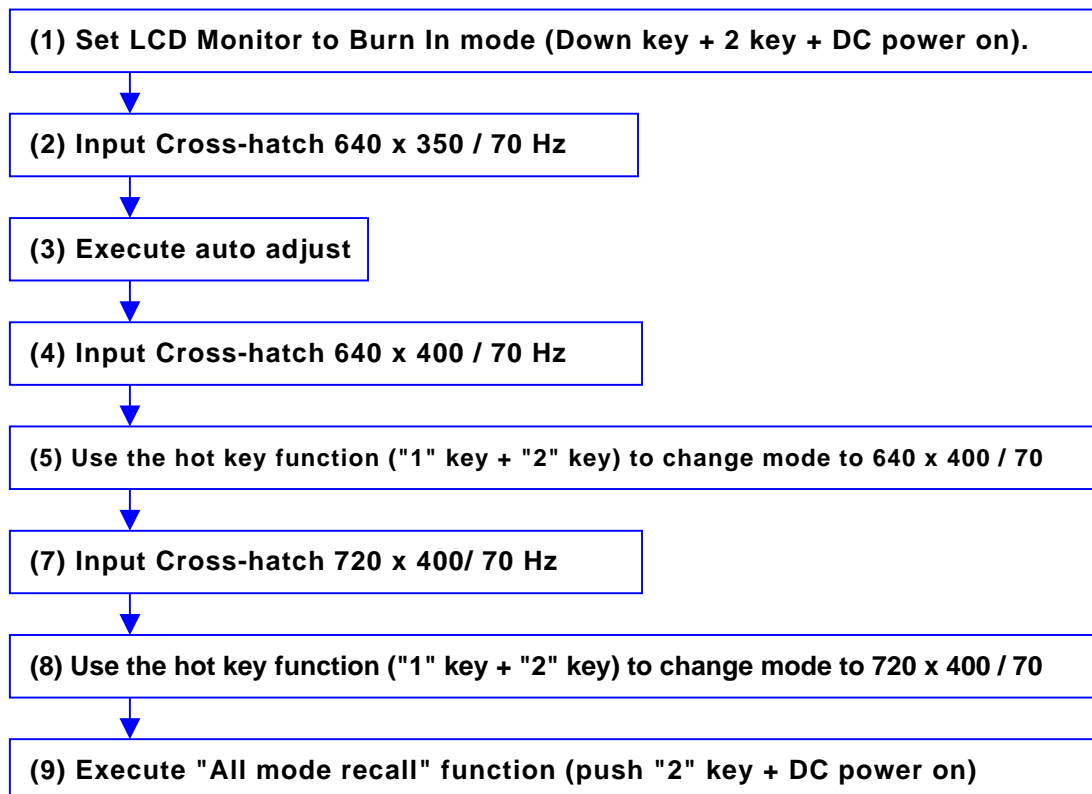
5.3.14.2 Set LCD Monitor to Factory mode (1 key + +DC power on).

5.3.14.3 Enter Factory Mode (press up key).

5.3.14.4 Recover color temperature settings:

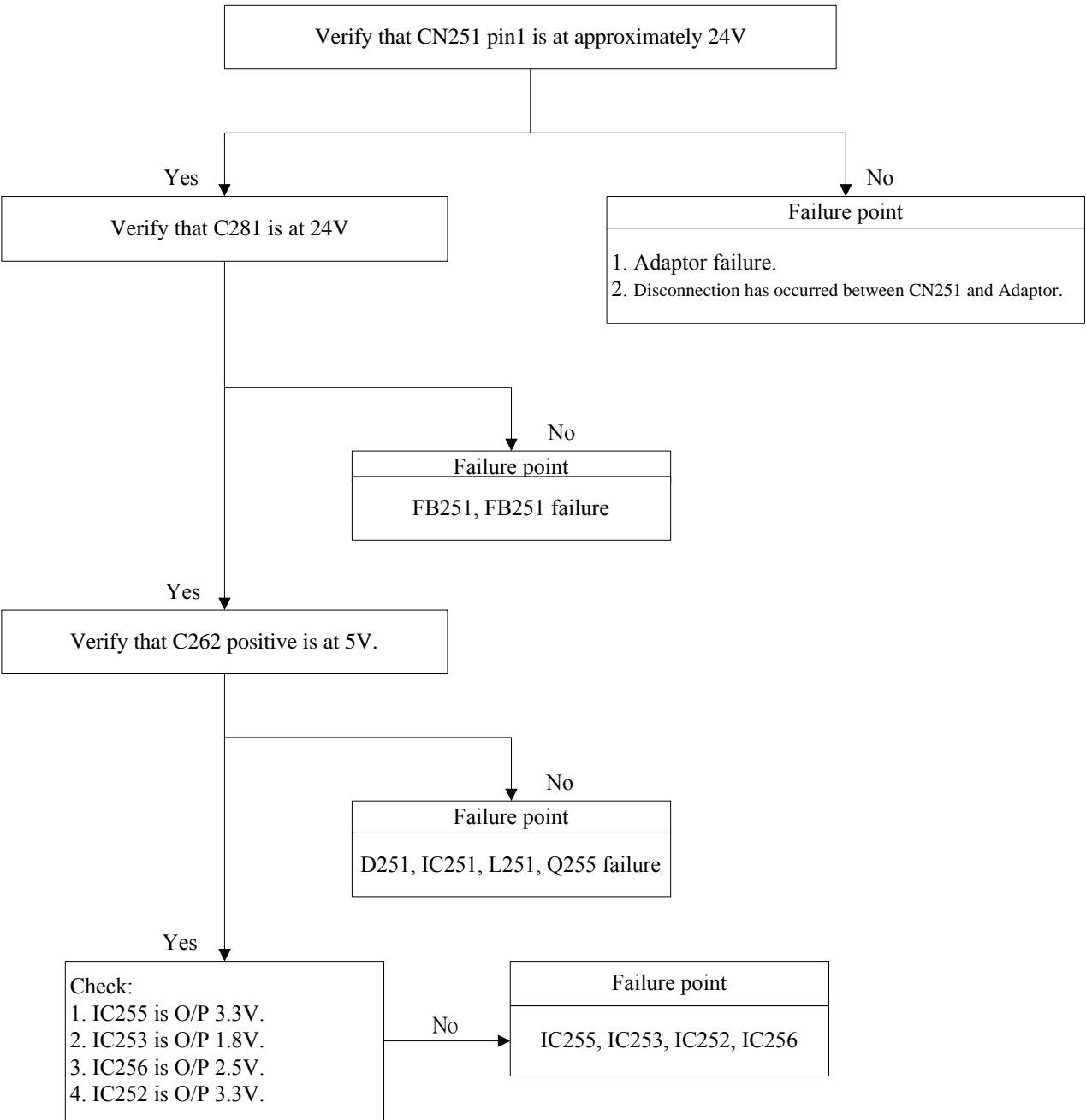


5.3.15 Adjust DOS Mode

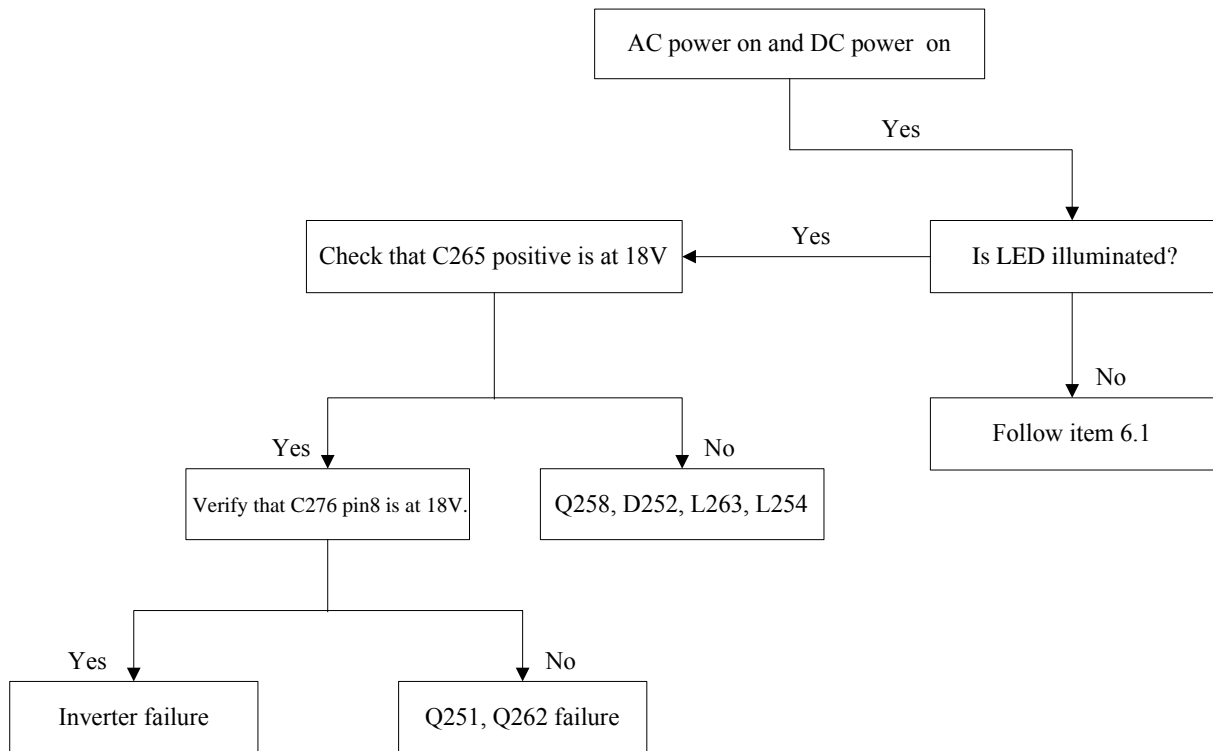


6. Troubleshooting Flow Chart

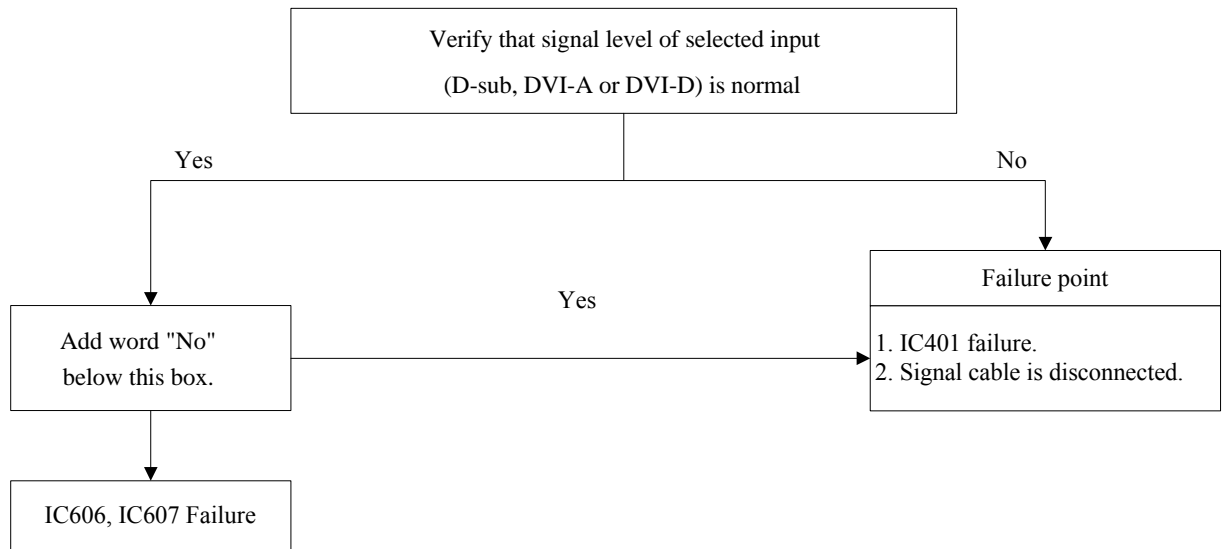
6.1 No power.



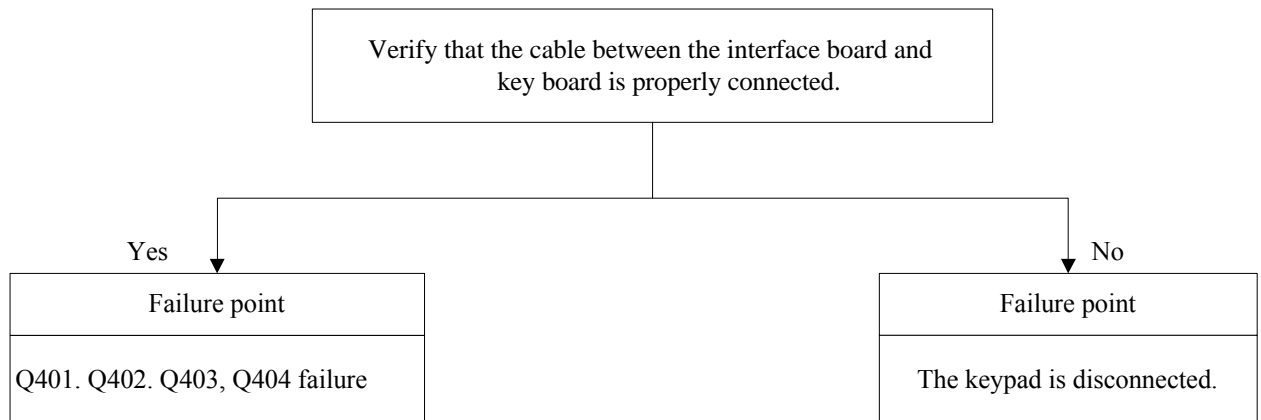
6.2 No display on screen (Screen is black, LED is off).



6.3 "No signal" message appears on screen.



6.4 Keypad does not work.



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VP2000s-1)

ViewSonic Model Number: VLCD826064

Rev: 1b

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Universal number#	Q'ty
1	Accessories:	POWER SUPPLY 60W 18V 3.33A	Removed and Replaced Part: 03/01/05	A-00001842	4900210180	1
2		AC POWER CORD L=1800 BLK NA #18*3C SVT C	Update Vendor P/N 03/01/05: ECR 5060	A-PC-0106-0150	3090107601	1
3	PC Board Assembly:	DC-AC INVERTER FOR L20DBR	Removed and Replaced Part: 03/01/05	B-00001843	4900506980	1
4		PWB ASSY I/F BD L20DBR 05FAB	Added: 03/01/05	B-00001844	5600110395	1
5	Cabinets:	CABINET ASSY L20CBR05DDB S0LRA1AT		M-CV-0830-2602	3368222700	1
6		COVER VESA ABS 41S8LBB1LS		M-CV-0830-2458	3361207400	1
7		F/B ASSY L20CBR05CDB S0LFA1AT	Update Vendor P/N 03/01/05	C-FP-0301-1050	3368311101	1
8		STAND ASSY L20CBR05ADB S8LBB1LS	Update Vendor P/N 03/01/05	C-BS-0303-0554	3368991403	1
9	Cables:	CABLE D-SUB/D-SUB L1800 BLK OD7.5		A-VC-0101-0390	3080427000	1
10		CABLE FFC 30P P1.0 L340 T1 LG	Update Vendor P/N 03/01/05	M-FC-0809-0838	3080516301	1
11	Documentation:	CD-ROM VSC A_CD_VP2000S-1 (072304)	Removed and Replaced Part: 03/01/05	DC-00001845	3532092700	1
12		MANUAL PACKING ASSY VSC VP201S L20DBR	Removed and Replaced Part: 03/01/05	DC-00001846	3532092800	1
13		LABEL BAR CODE 124*82		M-LB-0813-0978	3200787200	1
14		LABEL HV WARNING 100*25		M-LB-0813-0714	3202310700	1
15		LABEL ID 100*50 VSC VP2000S L20DBR	Removed and Replaced Part: 03/01/05	DC-00001847	3201986900	1
16		LABEL POP STICKER 89*89 VSC		M-LB-0813-1050	3209218400	1
17		LABEL SERIES PANEL 42*11 T0.05		M-LB-0813-0900	3202011000	1
18		LABEL STICKER OD10 WHT HI-POT		M-LB-0813-0785	3200158900	1
19		LABEL WARNING 81.7*81.7 VSC	Added: 03/01/05	DC-00000424	3202334500	1
20		PORTRAIT CD VSC A-CD-0002 V7.5 TAIWAN	Added: 03/01/05	A-CD-VP181S-2	3532065001	1
21	Electronic Components:	CORE BEAD 40*6.5*10 W5H+TAPE		E-L-0407-1587	2921021404	1
22	Hardware:	BRACKET PANEL SIDE-L SECC 325*30*2		M-MS-0808-8631	3460150200	1
23		BRACKET PANEL SIDE-R SECC 325*30*2		M-MS-0808-8630	3460150100	1
24		PANEL BKT L20CBR05DDB		M-BK-0805-0112	3790195400	1
25		SCREW M #4-40*7 HEXH #4-40*3 S18C		M-SCW-0824-0690	3105051501	4
26		SCREW M M3*0.5*4 FF C S18C ZN		M-SCW-0824-0777	3105225300	6
27		SCREW M M3*0.5*6 FF C S18C ZN		M-SCW-0824-0776	3105221000	6
28		SCREW M M3*0.5*8 FPH C S20C ZN BLK		M-SCW-0824-0772	3100130800	4
29		SCREW M M4*0.7*10 FF C S18C ZN BLK		M-SCW-0824-0775	3105123700	4
30		SCREW T M3*0.5*4 BIND C S18C ZN YE		M-SCW-0824-0732	3109010900	4
31		SCREW T M3*0.5*6 BIND C S18C ZN YE		M-SCW-0824-0413	3109011400	4
32		SCREW T M3*0.5*7 PAN C S+P S20C ZN		M-SCW-0824-0784	3109010700	1
33		SHIELD CAN INV SPTH 208.5*73.8*18 T.3	Removed and Replaced Part: 03/01/05	HW-00001848	3461226501	1
34		SHIELD CAN SPTH 289.9*150.1*41.5 T.3	Removed and Replaced Part: 03/01/05	HW-00001849	3461256200	1
35		WASHER SPRING SWRT		M-MS-0808-8040	3110250000	4
36	Miscellaneous:	ANGLE PAPER 2070*55*55 T5		M-MS-0808-2815	3511208300	0.375
37		CAP PAPER 1130*1390*120		M-MS-0808-3190	3510449200	0.032
38		CAP PAPER 1130*700*120		M-MS-0808-2672	3510449300	0.063
39		CONDUCTIVE AL 15*25 T0.06		M-MS-0808-8640	3463000700	1
40		CONDUCTIVE AL 50*100 T.06		M-MS-0808-8642	3463002000	2
41		CONDUCTIVE SPONGE 10*10*12		M-MS-0808-8646	3472855100	1
42		CONDUCTIVE SPONGE 30*8.5*10		M-MS-0808-8643	3472851200	1
43		CONDUCTIVE TAPE AL W50*L55 1120		M-MS-0808-8557	3240055600	1
44		DRYER 15G 80*60		M-MS-0808-7820	3520130500	2
45		INSULATOR PC 130*118.5 T.5		M-MS-0808-0016	3241127301	1
46		INSULATOR PC 231*13 T.5		M-MS-0808-8627	3241127400	1
47		MYLAR FILM 430*330 T.1 L20CBR05ACA		M-MS-0808-8624	3211030700	1
48		PE FILM t=0.02mm W=500		M-MS-0808-5135	3520082400	0.04
49		SPONGE EVA 5.8*5 T.5 BLK		M-MS-0808-2276	3240160801	1
50		SWITCH MEMBRANCE PET 99.5*9 VP181-		M-SW-0815-0224	3000725101	1
51		TAPE AL FOIL W=25 #80023 CATERON		M-MS-0808-1679	3222201300	0.18
52		TAPE AL FOIL W=50 TAPE AL-35FR 3M	Added: 03/01/05	M-00001850	3222201510	0.11
53		TAPE PE W=50 VIEWSONIC SECURITY		M-MS-0808-0918	3221903300	1.028
54		TAPE W=10 #1350F-1 3M	Added: 03/01/05	M-MS-0808-8202	3220133600	0.04
55		TAPE W=16 #897 3M		M-MS-0808-1680	3222400310	0.03
56		TAPE W=20 #1350F-1 3M	Added: 03/01/05	M-00001851	3220130800	0.062
57		TAPE W=20 #3800A NITTO		M-MS-0808-0724	3220161733	0.15
58		TAPE W=30 #10 3M		M-MS-0808-7463	3220501600	0.29
59		TAPE W=45 #7290 NITTO		M-MS-0808-7810	3220605633	0.128
60		TAPE W=76 PP47 914M 4P		M-MS-0808-4975	3221101500	0.8
61	Packing Material:	CARTON 552*337*489 VSC VP2000S	Update Vendor P/N 03/01/05: ECR 5060	P-BX-0601-1023	3512268401	1
62		END BLOCK-BOTTOM EPS L20CBW05AAW		P-FM-0602-0592	3500105600	1
63		END BLOCK-TOP EPS L20CBW05AAW		P-FM-0602-0591	3500105500	1
64		PALLET FUMIGATE 1120*1380*120	Added: 03/01/05	M-MS-0808-3275	3524009601	0.032

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Universal number#	Q'ty
65	PALLET FUMIGATE 1120*690*120	Added: 03/01/05	M-MS-0808-3374	3524009701		0.063
66	PE BAG 300*200*0.06T		M-MS-0808-8762	3500937501		1
67	PE BAG 740*580*.06T CLEAR		M-MS-0808-2667	3500939901		1
68	PE BAG 75*75*160L T.1		M-MS-0808-2671	3500943900		2
69	HANDLE PE 162*40.5 T1.5 BOTTOM NO5		M-MS-0808-2660	3470903500		1
70	HANDLE PE 209*18 T1.8 TOP NO501		M-MS-0808-2662	3470903600		1
71	NAME PLATE VSC 3-BIRD LOGO AL 11.0		M-MS-0808-8556	3200649100		1
72	PLASTIC STRIP W=12 T.5 BLACK		PL-SP-0723-0002	3520142700		1
73	POWER KNOB POM 901U 5140 S8LFB1LS		PL-NB-0707-1075	3360627100		1
74	RUBBER PAD 22*4 T3 BLK		PL-PD-0714-0140	3240970900		1
75	RUBBER PAD 25*10*1.5 BLACK STICK	Added: 03/01/05	M-MS-0808-5271	3240498900		1
76	RUBBER SILICON 12*12 T5		M-MS-0808-2631	3240946900		2

BOM LIST (VP2000s-1)

ViewSonic Model Number:

Rev: 1b

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	E-L-0407-1587	2921021404	CORE BEAD 40*6.5*10 W5H+TAPE			1
2	E-L-0407-1588	2921021437	CORE BEAD 40*6.5*10 A5 +TAPE			0
3	M-SW-0815-0224	3000725101	SWITCH MEMBRANCE PET 99.5*9 VP181-2			1
4	A-VC-0101-0390	3080427000	CABLE D-SUB/D-SUB L1800 BLK OD7.5			1
5	M-FC-0809-0838	3080516301	CABLE FFC 30P P1.0 L340 T1 LG			1
6	A-PC-0106-0150	3090107601	AC POWER CORD L=1800 BLK NA #18*3C SVT C			1
7	M-SCW-0824-0772	3100130800	SCREW M M3*0.5*8 FPH C S20C ZN BLK			4
8	M-SCW-0824-0690	3105051501	SCREW M #4-40*7 HEXH #4-40*3 S18C NI			4
9	M-SCW-0824-0775	3105123700	SCREW M M4*0.7*10 FF C S18C ZN BLK NYLOK			4
10	M-SCW-0824-0776	3105221000	SCREW M M3*0.5*6 FF C S18C ZN			6
11	M-SCW-0824-0777	3105225300	SCREW M M3*0.5*4 FF C S18C ZN			6
12	M-SCW-0824-0784	3109010700	SCREW T M3*0.5*7 PAN C S+P S20C ZN			1
13	M-SCW-0824-0732	3109010900	SCREW T M3*0.5*4 BIND C S18C ZN YEL			4
14	M-SCW-0824-0413	3109011400	SCREW T M3*0.5*6 BIND C S18C ZN YEL			4
15	M-MS-0808-8040	3110250000	WASHER SPRING SWRT			4
16	M-LB-0813-0785	3200158900	LABEL STICKER OD10 WHT HI-POT			1
17	M-LB-0813-0712	3200449700	LABEL WARING			0
18	M-MS-0808-8556	3200649100	NAME PLATE VSC 3-BIRD LOGO AL 11.07*7.92			1
19	M-LB-0813-0978	3200787200	LABEL BAR CODE 124*82			1
20	DC-00001847	3201986900	LABEL ID 100*50 VSC VP2000S L20DBR05BAB			1
21	M-LB-0813-0900	3202011000	LABEL SERIES PANEL 42*11 T0.05			1
22	M-LB-0813-0714	3202310700	LABEL HV WARNING 100*25			1
23	DC-00000424	3202334500	LABEL WARNING 81.7*81.7 VSC			1
24	M-MS-0808-8624	3211030700	MYLAR FILM 430*330 T.1 L20CBR05ACA			1
25	M-00001851	3220130800	TAPE W=20 #1350F-1 3M			0.062
26	M-MS-0808-8202	3220133600	TAPE W=10 #1350F-1 3M			0.04
27	M-MS-0808-0724	3220161733	TAPE W=20 #3800A NITTO			0.15
28	M-MS-0808-7463	3220501600	TAPE W=30 #10 3M			0.29
29	M-MS-0808-7810	3220605633	TAPE W=45 #7290 NITTO			0.128
30	M-MS-0808-4975	3221101500	TAPE W=76 PP47 914M 4P			0.8
31	M-MS-0808-0918	3221903300	TAPE PE W=50 VIEWSONIC SECURITY			1.028
32	M-MS-0808-1679	3222201300	TAPE AL FOIL W=25 #80023 CATERON			0.465
33	M-00001850	3222201510	TAPE AL FOIL W=50 TAPE AL-35FR 3M			0.11
34	M-MS-0808-1680	3222400310	TAPE W=16 #897 3M			0.03
35	M-MS-0808-8557	3240055600	CONDUCTIVE TAPE AL W50*L55 1120			1
36	M-MS-0808-2276	3240160801	SPONGE EVA 5.8*5 T.5 BLK			1
37	M-MS-0808-5271	3240498900	RUBBER PAD 25*10*1.5 BLACK STICK			1
38	M-MS-0808-2631	3240946900	RUBBER SILICON 12*12 T5			2
39	PL-PD-0714-0140	3240970900	RUBBER PAD 22*4 T3 BLK			1
40	M-MS-0808-0016	3241127301	INSULATOR PC 130*118.5 T.5			1
41	M-MS-0808-8627	3241127400	INSULATOR PC 231*13 T.5			1
42	PL-NB-0707-1075	3360627100	POWER KNOB POM 901U 5140 S8LFB1LS			1
43	M-CV-0830-2458	3361207400	COVER VESA ABS 41S8LBB1LS			1
44	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			64
45	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
46	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
47	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
48	M-CV-0830-2602	3368222700	CABINET ASSY L20CBR05DDB S0LRA1AT			1
49	M-MS-0808-8758	3200651100	NAME PLATE VIEWSONIC ABS 41 82.83*34.98			1
50	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			4
51	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
52	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
53	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
54	C-BC-0302-0627	3360254400	CABINET BACK ABS 41 S0LRA1AT VP2000S			1
55	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			520
56	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
57	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
58	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
59	M-MS-0808-8561	3460146100	BRACKET VESA SECC 110*20 T1			1
60	M-MS-0808-8563	3460146300	BRACKET KEYLOCK SECC 20.4*16.45*4.9 T.6			1
61	C-FP-0301-1050	3368311101	F/B ASSY L20CBR05CDB S0LFA1AT			1
62	M-MS-0808-8559	3360506800	LED LENS ABS 1865-12 S8LRB1LS			1
63	#N/A	4020370614	PLASTIC ABS 94HB 1865-12 PA-758			0.1
64	C-FP-0301-1024	3361092601	F/B ABS SILVER VP2000S S0LFA1AT			1
65	#N/A	4020372907	PLASTIC ABS 94HB 5140 D-180			160
66	#N/A	4020372908	PLASTIC ABS 94HB 5140 HF-380			0
67	#N/A	4020372909	PLASTIC ABS 94HB 5140 SD-0150			0
68	#N/A	4020372914	PLASTIC ABS 94HB 5140 PA-757			0
69	C-BS-0303-0554	3368991403	STAND ASSY L20CBR05ADB S8LBB1LS			1
70	M-SCW-0824-0781	3105127100	SCREW M M4*0.7*12 FF C S18C ZN NL			4
71	M-SCW-0824-0778	3105229400	SCREW M M3*0.5*10 FF C S18C ZN			1
72	M-SCW-0824-0782	3105280200	SCREW M M3*0.5*4 FF C S18C ZN BLK			2

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
73	M-SCW-0824-0779	3109017700	SCREW T M3*2.7*7.5 FF C S18C ZN YEL			2
74	M-SCW-0824-0780	3109019100	SCREW T M3*2.7*7.2 FLAT C S18C ZN YEL			4
75	M-CV-0830-2459	3361207500	COVER STAND FRONT ABS 41 S8LBB1LS			1
76	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			49
77	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
78	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
79	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
80	M-CV-0830-2461	3361207700	COVER STAND REAR ABS 41 S8LBB1LS			1
81	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			37
82	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
83	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
84	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
85	M-CV-0830-2462	3361207800	COVER BASE ABS 41 S8LBB1LS			1
86	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			20
87	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
88	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
89	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
90	M-CV-0830-2463	3361207900	COVER HINGE1 ABS 41 S8LBB1LS			1
91	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			30
92	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
93	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
94	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
95	M-CV-0830-2464	3361208001	COVER HINGE ABS 41 S8LRB1LS			1
96	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			7.5
97	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
98	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
99	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
100	#N/A	3368230202	BASE BOTTOM ASSY L20CBR05ADB S0LBB1AT			1
101	M-SCW-0824-0773	3105034400	SCREW M M3*0.5*6 FLAT C S20C ZN NL(P)			6
102	M-SCW-0824-0779	3109017700	SCREW T M3*2.7*7.5 FF C S18C ZN YEL			2
103	M-SCW-0824-0780	3109019100	SCREW T M3*2.7*7.2 FLAT C S18C ZN YEL			2
104	M-CV-0830-2472	3360245300	COVER BOTTOM ABS 41 S0LBA1AT			1
105	#N/A	4020371607	PLASTIC ABS 94HB 41 D-180			209
106	#N/A	4020371608	PLASTIC ABS 94HB 41 HF-380			0
107	#N/A	4020371609	PLASTIC ABS 94HB 41 SD-0150			0
108	#N/A	4020371614	PLASTIC ABS 94HB 41 PA-707			0
109	#N/A	3790184301	BKT BASE ASSY L20CBR05ACB			1
110	M-SCW-0824-0773	3105034400	SCREW M M3*0.5*6 FLAT C S20C ZN NL(P)			2
111	PL-PD-0714-0100	3240957000	RUBBER PAD OD20 T4 BLACK			2
112	PL-PD-0714-0101	3240968900	RUBBER PAD 20*20 T3 BLK			1
113	M-MS-0808-8632	3460150703	BRACKET BASE2 SECC 173*190.4 T2 VP201			1
114	M-MS-0808-8635	3460151002	BRACKET BASE3 SECC 173*190.4 T2 VP201			1
115	M-MS-0808-8636	3460151102	BRACKET BASE1 SECC 173*190.4 T2 VP201			1
116	#N/A	3790184400	BKT BASE FOOT ASSY L20CBR05ACB			2
117	M-SCW-0824-0783	3105280400	SCREW M M3*0.5*4 FLAT C S20C ZN NL			2
118	PL-PD-0714-0100	3240957000	RUBBER PAD OD20 T4 BLACK			1
119	M-MS-0808-8633	3460150801	BRACKET BASE FOOT1 SECC 195.3*62.5 T2 VP			1
120	M-MS-0808-8634	3460150902	BRACKET BASE FOOT2 SECC 195.3*62.5 T2 VP			1
121	M-MS-0808-8639	3461752201	HINGE SECC 312.5*51.82 L20CBW05ABB			1
122	M-WR-0828-0739	3470308700	WIRE SADDLE NYLON66 94V2 41			3
123	M-MS-0808-8630	3460150100	BRACKET PANEL SIDE-R SECC 325*30*25 T.8			1
124	M-MS-0808-8631	3460150200	BRACKET PANEL SIDE-L SECC 325*30*25 T.8			1
125	HW-00001848	3461226501	SHIELD CAN INV SPTH 208.5*73.8*18 T.3			1
126	HW-00001849	3461256200	SHIELD CAN SPTH 289.9*150.1*41.5 T.3			1
127	M-MS-0808-2660	3470903500	HANDLE PE 162*40.5 T1.5 BOTTOM NO501			1
128	M-MS-0808-2662	3470903600	HANDLE PE 209*18 T1.8 TOP NO501			1
129	P-FM-0602-0591	3500105500	END BLOCK-TOP EPS L20CBW05AAW			1
130	P-FM-0602-0592	3500105600	END BLOCK-BOTTOM EPS L20CBW05AAW			1
131	M-MS-0808-8762	3500937501	PE BAG 300*200*0.06T			1
132	M-MS-0808-2667	3500939901	PE BAG 740*580*0.06T CLEAR			1
133	M-MS-0808-2671	3500943900	PE BAG 75*75*160L T.1			2
134	M-MS-0808-3190	3510449200	CAP PAPER 1130*1390*120			0.032
135	M-MS-0808-2672	3510449300	CAP PAPER 1130*700*120			0.063
136	M-MS-0808-2815	3511208300	ANGLE PAPER 2070*55*55 T5			0.375
137	P-BX-0601-1023	3512268401	CARTON 552*337*489 VSC VP2000S			1
138	M-MS-0808-5135	3520082400	PE FILM t=0.02mm W=500			0.04
139	M-MS-0808-7820	3520130500	DRYER 15G 80*60			2
140	PL-SP-0723-0002	3520142700	PLASTIC STRIP W=12 T.5 BLACK			1
141	M-MS-0808-3275	3524009601	PALLET FUMIGATE 1120*1380*120			0.032
142	M-MS-0808-3374	3524009701	PALLET FUMIGATE 1120*690*120			0.063
143	A-CD-VP181S-2	3532065001	PORTRAIT CD VSC A-CD-0002 V7.5 TAIWAN			1
144	DC-00001845	3532092700	CD-ROM VSC A_CD_VP2000S-1 (072304)			1
145	DC-00001846	3532092800	MANUAL PACKING ASSY VSC VP2000S-1			1
146	M-MS-0808-8396	3520094201	PE BAG 260*155*0.1T			1
147	#N/A	5010010100	MANUAL QSG VSC VP2000S (072304)			1
148	M-BK-0805-0112	3790195400	OTHER ASSY PANEL BKT L20CBR05DDB			1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
149	M-MS-0808-8628	3460149900	BRACKET IF&POWER SECC 95*39.2 T.8			1
150	M-BK-0805-0113	3460190600	BRACKET PANEL SECC 433.4*216.3*42 T.8 LG			1
151	A-00001842	4900210180	POWER SUPPLY 60W 18V 3.33A			1
152	E-R-0405-3195	0013102000	RES CF 1/4W 1K J	R117		1
153	#N/A	0013272000	RES CF 1/4W 2.7K J	R115		1
154	E-R-0405-3210	0013472000	RES CF 1/4W 4.7K J	R104		1
155	#N/A	0013824000	RES CF 1/4W 820K J	R103		1
156	#N/A	0133369000	RES MOF 1W .36 J	R114		1
157	#N/A	0311059000	RES CH 1/4W 10K F 1206	R205		1
158	#N/A	0311081000	RES CH 1/4W 61.9K F 1206	R204		1
159	E-R-0405-7124	0313000000	RES CH 1/4W ZERO J 1206	J1,J3,R206		3
160	#N/A	0313101000	RES CH 1/4W 100 J 1206	R201,R202		2
161	#N/A	0313102000	RES CH 1/4W 1K J 1206	R208		1
162	#N/A	0313104000	RES CH 1/4W 100K J 1206	R113,R119		2
163	#N/A	0313125000	RES CH 1/4W 1.2M J 1206	R101,R102		2
164	#N/A	0313151000	RES CH 1/4W 150 J 1206	R120,R121,R122		3
165	#N/A	0313152000	RES CH 1/4W 1.5K J 1206	R118		1
166	#N/A	0313183000	RES CH 1/4W 18K J 1206	R107,R108,R109		3
167	#N/A	0313200000	RES CH 1/4W 20 J 1206	R110		1
168	#N/A	0313302000	RES CH 1/4W 3K J 1206	R111		1
169	#N/A	0313510000	RES CH 1/4W 51 J 1206	R123		1
170	#N/A	0313515000	RES CH 1/4W 5.1M J 1206	R105,R106		2
171	#N/A	0313681000	RES CH 1/4W 680 J 1206	R207		1
172	#N/A	0313753000	RES CH 1/4W 75K J 1206	R116		1
173	#N/A	0855340721	FUSE TSC 4A 250V UL VDE 11*4 PIG	F101		1
174	#N/A	0910500316	RES NTC 5 L 4A	TH101		1
175	#N/A	0914740111	RES NTC 470K J 5200+-7%	TH102		1
176	#N/A	0914740116	RES NTC 470K J 5200+-7%	TH102		0
177	#N/A	0914740216	RES NTC 470K J 5200 +-3%	TH102		0
178	#N/A	0923210016	VARISTOR 320VAC 92J 3500A	Z101		1
179	#N/A	0923210041	VARISTOR 320VAC 71J 2000A	Z101		0
180	#N/A	0923210045	VARISTOR 320VAC 70J 2500A	Z101		0
181	#N/A	1101030027	CAP Y CD 250VAC 100P K B I	CY101,CY102		2
182	#N/A	1101030032	CAP Y CD 250VAC 100P K B I	CY101,CY102		0
183	#N/A	1101030033	CAP Y CD 250VAC 100P M B I	CY101,CY102		0
184	E-C-0404-4690	1101346027	CAP Y CD 250VAC 2.2KP M E II	CY103		1
185	E-C-0404-4690	1101346032	CAP Y CD 250VAC 2.2KP M E II	CY103		0
186	#N/A	1140745800	CAP CD 1KV 1KP K X7R TP5	C109,C201		2
187	#N/A	1200758000	CAP MO DP 50V .1U K X7R TP R	C205		1
188	#N/A	144146819103	CAP AL 25V 680U M 10*16 TP5	C202,C203,C204		0
189	#N/A	144146819107	CAP AL 25V 680U M 10*16 TP5	C202,C203,C204		3
190	E-C-0404-3852	144162201400	CAP AL 50V 22U M 5*11 TP5	C105		1
191	#N/A	144164701400	CAP AL 50V 47U M 6.3*11 TP5	C108		1
192	#N/A	145401510005	CAP AL 400V 150U M 18*35.5	C101		1
193	#N/A	145401510033	CAP AL 400V 150U M 18*35.5	C101		0
194	#N/A	1511456100	CAP MC CP 50V .022U J X7R 0805	C103		1
195	#N/A	1511530200	CAP MC CP 50V 100P J COG 1206	C102		1
196	#N/A	1512458100	CAP MC CP 50V .1U K X7R 0805	C104,C106,C107,C206		4
197	#N/A	1604315524	CAP X MP PC 275VAC .47U K P15	CX101		1
198	#N/A	1604315537	CAP X MP PC 275VAC .47U M P15	CX101		0
199	#N/A	1604315538	CAP X MP PC 275VAC .47U K P15	CX101		0
200	#N/A	1604315550	CAP X MP PC 275VAC .47U K P15	CX101		0
201	E-D-0403-1395	200131610020	DIO BRD 4A 600V 3S(KBJ)	CR101		1
202	#N/A	200131610023	DIO BRD 4A 600V GSIB-3G(KBJ)	CR101		0
203	#N/A	201300570415	DIO FRD 1A 200V DO-41 50nS	D106		1
204	#N/A	201300570423	DIO FRD 1A 200V DO-204AL(DO-41) 50nS	D106		0
205	E-D-0403-2025	201330630007	EOL DIO FRD 1A 1000V SOD57 75NS	D101		1
206	#N/A	201330630031	DIO FRD 1A 1000V SOD57 75nS	D101		0
207	#N/A	202003670008	DIO SBD 20A 150V TO-220AB C.C.	D201,D202		2
208	E-D-0403-1980	203322730311	DIO ZEN 0.5W 23.6-24.7V DO-35	D110		1
209	#N/A	203322730331	DIO ZEN 0.5W 23.6-24.7V DO-35	D110		0
210	#N/A	203812540231	DIO ZEN 0.5W 4.94-5.20V MINIMELF	D109		1
211	#N/A	203812540236	DIO ZEN 0.5W 4.94-5.20V LLDS(MINIMELF)	D109		0
212	E-D-0403-2133	203812670331	DIO ZEN 0.5W 17.42-18.33V MINIMELF	D108		1
213	E-D-0403-2134	203812670336	DIO ZEN 0.5W 17.42-18.33V LLDS(MINIMELF)	D108		0
214	#N/A	203812710131	DIO ZEN 0.5W 20.64-21.71V MINIMELF	D107		1
215	#N/A	203812710136	DIO ZEN 0.5W 20.64-21.71V LLDS(MINIMELF)	D107		0
216	#N/A	204810750107	DIO SW 0.2A 75V SOD80C(MINIMELF)	D103,D104,D105		3
217	E-D-0403-2046	204810750131	DIO SW 0.15A 75V MINIMELF	D103,D104,D105		0
218	#N/A	204812000207	DIO SW 0.25A 200V SOD-80C (MINIMELF)	D102		1
219	#N/A	204812000223	DIO SW 0.25A 200V MINIMELF	D102		0
220	#N/A	204812000231	DIO SW 0.25A 200V MINIMELF	D102		0
221	E-Q-0402-7019	210522000505	TR 40V 0.6A SOT-23 80	Q102		0
222	#N/A	210522000507	TR 40V 0.6A SOT-23 80	Q102		1
223	#N/A	2310040207	PHOTO 70V 4PIN 160-320% 10.16mm	IC102		1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
224	#N/A	242017400206	FET 600V 10A 0.75ohm SC-67	Q101		1
225	#N/A	2500004210	IC VOL ADJ 37V 2.5V 1% T92	IC201		1
226	#N/A	2500004213	IC VOL ADJ 37V 2.5V 1% T92	IC201		0
227	#N/A	2500004214	IC VOL ADJ 37V 2.5V 1% T92	IC201		0
228	#N/A	2633001811	IC ASIC SO-8PIN	IC101		1
229	#N/A	2808312601	TRANSFORMER SMT 480UH J	T101		0
230	#N/A	2811100380	TRANSFORMER SMT 0.48MH J	T101		1
231	#N/A	2817186980	LINE FILTER T10 638uH MIN	FL101		1
232	#N/A	2817242080	LINE FILTER T16 17.5mH MIN	FL102		1
233	E-L-0407-0494	2921020100	CORE BEAD 3.5*6*1.0 T/R	FB101,FB102,FB103,FB104		4
234	#N/A	2970046403	PWB S 0 E1 CEM-1 118.5*115*1.6(POWER BD)			1
235	#N/A	3100000900	SCREW M M3*0.5*9 FLAT C S20C ZN			1
236	#N/A	3100030700	SCREW M M3*0.5*7 FLAT C S20C ZN BLK			2
237	M-MS-0808-9125	3110110900	NUT M3*0.5 AISI1018			3
238	#N/A	3341728501	HSK AL T=1.5 93.5*28			1
239	#N/A	3341728600	HSK AL T=1.5 70.5*17			1
240	M-WR-0828-0344	3411000200	JUMP WIRE COPPER 0.6*5.0*4.0	L201		1
241	M-WR-0828-0249	3411000400	JUMP WIRE COPPER 0.6*10.0*4.0	J2		1
242	M-WR-0828-0388	3411000600	JUMP WIRE COPPER 0.6*15.0*4.0	J4		1
243	#N/A	3600040303	SWITCH ASSY B1811T0B-2E L20DBR 05AAB COR			1
244	#N/A	3670237800	WIRE WITH HOUSING 1007#20 L70 BLK/RED			1
245	#N/A	4900505211	DC-AC INVERTER 20" LG FOR L20DBR			0
246	B-00001843	4900506980	DC-AC INVERTER FOR L20DBR			1
247	#N/A	0313202000	RES CH 1/4W 2K J 1206	R44		1
249	#N/A	0341056300	RES CH 1/10W 8.2K F 0603	R45		1
251	#N/A	0341067300	RES CH 1/10W 22K F 0603	R12,R24,R28,R32,R4,R8		6
252	E-R-0405-7028	0341071300	RES CH 1/10W 33K F 0603	R68,R70		2
253	E-R-0405-7034	0341077300	RES CH 1/10W 47K F 0603	R63,R79,R80		3
254	E-R-0405-7037	0341079300	RES CH 1/10W 51K F 0603	R37,R49,R57		3
255	#N/A	0341082300	RES CH 1/10W 68K F 0603	R36,R56		2
256	#N/A	0341084300	RES CH 1/10W 82K F 0603	R53		1
257	#N/A	0341087300	RES CH 1/10W 100K F 0603	R18,R51,R55,R61,R62		5
258	#N/A	0341092300	RES CH 1/10W 150K F 0603	R52		1
259	#N/A	0341095300	RES CH 1/10W 221K F 0603	R17		1
260	#N/A	0341104300	RES CH 1/10W 470K F 0603	R15		1
261	#N/A	0341139300	RES CH 1/10W 910 F 0603	R11,R23,R27,R31,R7		5
262	E-R-0405-7038	0341421300	RES CH 1/10W 560 F 0603	R72,R73,R74,R76,R77		5
263	E-R-0405-6685	0343103300	RES CH 1/10W 10K J 0603	R13,R33,R35,R81		4
264	E-R-0405-7050	0343104300	RES CH 1/10W 100K J 0603	R1,R19,R20,R21,R25,R29,R38,R39,R5,R9		10
265	E-R-0405-6686	0343105300	RES CH 1/10W 1M J 0603	R10,R2,R22,R26,R30,R6		6
266	#N/A	0343203300	RES CH 1/10W 20K J 0603	R46		1
267	#N/A	0343223300	RES CH 1/10W 22K J 0603	R64,R65,R66,R67		4
268	#N/A	0343333300	RES CH 1/10W 33K J 0603	R78		1
269	#N/A	0343394300	RES CH 1/10W 390K J 0603	R54		1
270	#N/A	0343432300	RES CH 1/10W 4.3K J 0603	R34		1
271	#N/A	0343561300	RES CH 1/10W 560 J 0603	R75		1
272	#N/A	0343824300	RES CH 1/10W 820K J 0603	R69,R71		2
273	#N/A	0343911300	RES CH 1/10W 910 J 0603	R3		1
274	E-FS-0410-0074	0841110702	FUSE F/P 4A 125V UL CSA	F1		1
275	#N/A	1165104012	CAP CD 3KV 5P D SL P7.5	CY1,CY2,CY3,CY4,CY5,CY6		6
276	#N/A	144143311400	CAP AL 25V 330U M 10*12.5 TP5	C46,C47		2
277	#N/A	1511532000	CAP MC CP 50V 120P J C0G 0603	C50		1
278	E-C-0404-4877	1511538000	CAP MC CP 50V 220P J C0G 0603	C8		1
279	#N/A	1512446000	CAP MC CP 50V 2.2KP K X7R 0603	C36,C44		2
280	E-C-0404-4882	1512452000	CAP MC CP 50V 6.8KP K X7R 0603	C14,C6		2
281	#N/A	1512452100	CAP MC CP 50V 6.8KP K X7R 0805	C30,C32,C34,C37,C39,C42		6
282	E-C-0404-4496	1512454100	CAP MC CP 50V .01U K X7R 0805	C31,C33,C35,C38,C40,C43		6
283	#N/A	1512456000	CAP MC CP 50V .022U K X7R 0603	C18,C19,C21,C22,C23		5
284	#N/A	1512458100	CAP MC CP 50V .1U K X7R 0805	C20		1
285	#N/A	1512458200	CAP MC CP 50V .1U K X7R 1206	C48,C49		2
286	E-C-0404-4865	1542458000	CAP MC CP 16V .1U K X7R 0603	C1,C10,C11,C12,C13,C17,C2,C3,C4,C45,C9		11
287	#N/A	1542467100	CAP MC CP 16V 1U K X7R 0805	C15,C16,C5,C7		4
288	#N/A	15A2491300	CAP MC CP 10V 10U K X7R 1210	C24,C25		2
289	#N/A	203812560131	DIO ZEN 0.5W 7.07-7.45V MINIMELF	D21,D22,D23,D24		4
290	#N/A	203812560136	DIO ZEN 0.5W 7.07-7.45V LLDS(MINIMELF)	D21,D22,D23,D24		0

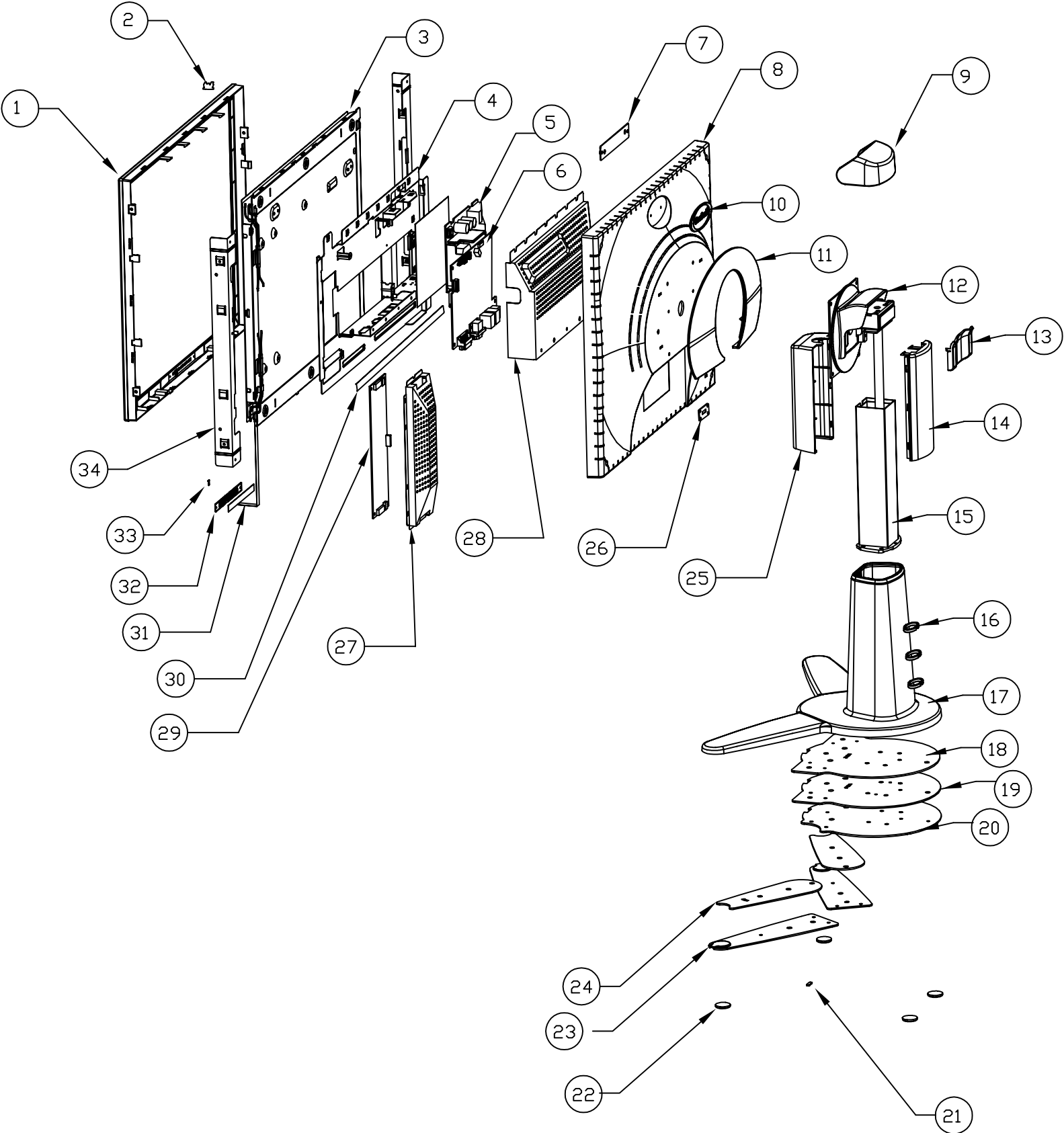
Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
291	E-D-0403-2131	203812570431	DIO ZEN 0.5W 7.78-8.19V MINIMELF	D20		1
292	E-D-0403-2132	203812570436	DIO ZEN 0.5W 7.78-8.19V LLDS(MINIMELF)	D20		0
293	#N/A	203812620131	DIO ZEN 0.5W 12.55-13.21V MINIMELF	D19		1
294	#N/A	203812620136	DIO ZEN 0.5W 12.55-13.21V LLDS(MINIMELF)	D19		0
295	#N/A	204520700205	DIO SW 0.215A 70V SOT-23 SE.	D10,D11,D12,D13,D14,D15,D16,D17,D18,D7,D8,D9		0
296	E-D-0403-2049	204520700207	DIO SW 0.215A 75V SOT-23 SE.	D10,D11,D12,D13,D14,D15,D16,D17,D18,D7,D8,D9		12
297	#N/A	204810750107	DIO SW 0.2A 75V SOD80C(MINIMELF)	D1,D2,D3,D4,D5,D6		6
298	E-D-0403-2046	204810750131	DIO SW 0.15A 75V MINIMELF	D1,D2,D3,D4,D5,D6		0
299	E-Q-0402-7019	210522000505	TR 40V 0.6A SOT-23 80	Q12,Q17		0
300	#N/A	210522000507	TR 40V 0.6A SOT-23 80	Q12,Q17		2
301	E-Q-0402-7018	211522000405	TR -40V -0.6A SOT-23 100	Q19		0
302	#N/A	211522000407	TR -40V -0.6A SOT-23 100	Q19		1
303	E-Q-0402-1554	242522500005	FET 60V 0.115A 7.5OHM LL SOT-23	Q1,Q10,Q11,Q18,Q2,Q20,Q3,Q4,Q5,Q6,Q7,Q8,Q9		0
304	#N/A	242522500007	FET 60V 0.18A 5OHM LL SOT-23	Q1,Q10,Q11,Q18,Q2,Q20,Q3,Q4,Q5,Q6,Q7,Q8,Q9		13
305	#N/A	242601000217	FET 30V 7A 0.028OHM LL SO-8 N+P	Q13,Q14,Q15,Q16		0
306	#N/A	242601000263	FET 30V 6.3A 0.028ohm LL SO-8 N+P	Q13,Q14,Q15,Q16		4
307	#N/A	251030130F	IC DUAL CCFL INVERTER CONTROL SSOP-30P	C1		1
308	#N/A	2801978900	TRANSFORMER IT UI-11.7 00A-2350C	T1,T2,T3,T4,T5,T6		6
309	#N/A	2970046602	PWB D0 E1 FR-4 180*60*1.6 (L20C-3)			1
310	#N/A	3070074766	HEADER BOX 94V0 9-5P P2.0 R SMD			2
311	#N/A	3070075166	HEADER NYLON46 94V0 2PIN SMD			2
312	#N/A	3240256100	INSULATOR FR-60 T.25 94V-0 FOR 18B013A			1
313	#N/A	3861270000	CABLE ASSY 1007 #26 7HOLES DAC-18B014			1
314	DC-00001459	5012046900	CARD ATTENTION SHEET 190*125 VSC-20/21			1
315	DC-00001473	5012047200	ARD INFORMATION 190*125 (EPA)			1
316	M-LCD-0826-0205	5052000450	LCD 20.1" TFT PANEL UXGA			1
317	B-00001844	5600110395	PWB ASSY I/F BD L20DBR 05GAB			1
318	E-R-0405-7124	0313000000	RES CH 1/4W ZERO J 1206	R670		1
319	#N/A	0341052300	RES CH 1/10W 4.7K F 0603	R260,R261		2
320	#N/A	0341059300	RES CH 1/10W 10K F 0603	R273		1
321	#N/A	0341384300	RES CH 1/10W 249 F 0603	R403		1
322	#N/A	0341406300	RES CH 1/10W 30.9K F 0603	R272		1
323	#N/A	0341632300	RES CH 1/10W 33 F 0603	R415		1
324	E-R-0405-7041	0343000300	RES CH 1/10W ZERO J 0603	C256,R401,R402,R445,R617,R631,R632,R635,R636,R637,R640,R641,R644,R645		14
325	E-R-0405-7049	0343100300	RES CH 1/10W 10 J 0603	R266		1
326	#N/A	0343101100	RES CH 1/8W 100 J 0805	R265		1
327	E-R-0405-6684	0343101300	RES CH 1/10W 100 J 0603	R411,R421,R422,R426,R428,R608,R609,R618,R622,R629,R638,R646,R647		13
328	E-R-0405-7054	0343102300	RES CH 1/10W 1K J 0603	R654		1
329	E-R-0405-6685	0343103300	RES CH 1/10W 10K J 0603	R256,R257,R262,R274,R278,R289,R292,R406,R412,R423,R424,R427,R431,R432,R435,R436,R437,R438,R439,R613,R614,R615,R616,R633,R634,R639		26
330	E-R-0405-7050	0343104300	RES CH 1/10W 100K J 0603	R648,R649,R650,R651,R652,R653,R663,R664,R665,R666,R667,R668		12
331	#N/A	0343151300	RES CH 1/10W 150 J 0603	R425,R604,R605,R606,R619,R620,R621		7
332	#N/A	0343203300	RES CH 1/10W 20K J 0603	R290,R291		2
333	#N/A	0343220100	RES CH 1/8W 22 J 0805	R271		1
334	E-R-0405-6687	0343222300	RES CH 1/10W 2.2K J 0603	R277,R611,R612,R623,R630		5
335	E-R-0405-7058	0343330300	RES CH 1/10W 33 J 0603	R416,R417		2
336	#N/A	0343332100	RES CH 1/8W 3.3K J 0805	R267		1
337	E-R-0405-7057	0343332300	RES CH 1/10W 3.3K J 0603	R407,R418,R419,R420,R446,R448		6

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
338	E-R-0405-7043	0343392300	RES CH 1/10W 3.9K J 0603	R254		1
339	E-R-0405-6690	0343470300	RES CH 1/10W 47 J 0603	R607,R610,R627,R628		4
340	#N/A	0343471100	RES CH 1/8W 470 J 0805	R447,R449		2
341	E-R-0405-7033	0343471300	RES CH 1/10W 470 J 0603	R450,R656		2
342	E-R-0405-7031	0343472300	RES CH 1/10W 4.7K J 0603	R276,R284,R286,R433,R434		5
343	E-R-0405-7035	0343473300	RES CH 1/10W 47K J 0603	R285,R287,R408		3
344	#N/A	0343560300	RES CH 1/10W 56 J 0603	R657,R658,R659,R660,R661,R662		6
345	E-R-0405-6691	0343562300	RES CH 1/10W 5.6K J 0603	R255		1
346	#N/A	0343681300	RES CH 1/10W 680 J 0603	R429,R430		2
346	#N/A	0343750100	RES CH 1/8W 75 J 0805	R601,R602,R603,R624,R625,R626		6
347	E-R-0405-7147	0619900105	RES ARRAY 1/16W 100 J 8P4R 1206	RP417		1
348	#N/A	0619900112	RES ARRAY 1/16W 100 J 8P4R 1206	RP417		0
349	#N/A	0619900705	RES ARRAY 1/16W 10K J 8P4R 1206	RP414,RP415,RP416,RP419,RP420		5
350	#N/A	0619900712	RES ARRAY 1/16W 10K J 8P4R 1206	RP414,RP415,RP416,RP419,RP420		0
351	#N/A	0619901105	RES ARRAY 1/16W 33 J 8P4R 1206	RP401,RP402,RP403,RP404,RP405,RP406,RP407,RP408,RP409,RP410,RP411,RP412,RP413		13
352	#N/A	0619901112	RES ARRAY 1/16W 33 J 8P4R 1206	RP401,RP402,RP403,RP404,RP405,RP406,RP407,RP408,RP409,RP410,RP411,RP412,RP413		0
353	#N/A	0730060412	CRYSTAL 14.318MHZ 30PPM 30PF 49US	X401		1
354	#N/A	0841110802	FUSE F/P 5A 125V UL CSA	F251		1
355	E-C-0404-5322	149024701208	CAP AL CP 6.3V 47U M 5*5.5	C267,C278,C401,C411,C424,C433,C441,C449,C457,C477		10
356	#N/A	149024701233	CAP AL CP 6.3V 47U M 5*5.4	C267,C278,C401,C411,C424,C433,C441,C449,C457,C477		0
357	#N/A	149101021533	CAP AL CP 10V 1KU M 10*10	C262,C263		2
358	#N/A	149122211333	CAP AL CP 16V 220U M 6.3*7.7	C279		1
359	#N/A	149144711533	CAP AL CP 25V 470U M 10*10	C281		1
360	#N/A	149151011333	CAP AL CP 35V 100U M 6.3*7.7	C276		1
361	E-C-0404-4878	1511514000	CAP MC CP 50V 22P J C0G 0603	C422,C423,C601,C602,C604,C607		6
362	E-C-0404-4876	1512445000	CAP MC CP 50V 1KP K X7R 0603	C255,C258		2
363	#N/A	1517654000	CAP MC CP 50V .01U Z Y5V 0603	C254,C627,C628,C629,C630,C631,C632,C633		8
364	E-C-0404-4497	1517658000	CAP MC CP 50V .1U Z Y5V 0603	C251,C259,C266,C268,C275,C277,C280,C283,C284,C402,C403,C404,C405,C406,C407,C408,C409,C410,C412,C413,C414,C415,C416,C417,C418,C419,C420,C421,C425 C426,C427,C428,C429,C430,C431,C432,C434,C435,C436,C437,C438,C439,C442,C443,C444,C445,C446,C447,C448,C450,C451,C452,C453,C454,C455,C456,C458 C459,C460,C461,C462,C463,C464,C465,C466,C467,C468,C469,C470,C471,C472,C473,C474,C475,C476,C478,C609,C610,C618,C620,C621,C622,C623,C624,C625		85
365	#N/A	1557667100	CAP MC CP 25V 1U Z Y5V 0805	C253,C274,C286		3
366	#N/A	15A7667000	CAP MC CP 10V 1U Z Y5V 0603	C270,C273,C282,C603,C608		5

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
367	E-C-0405-4321	15A7691100	CAP MC CP 10V 10U Z Y5V 0805	C440,C611,C612,C613,C614,C615,C616,C626		8
368	#N/A	202351580023	DIO SBD 5A 40V DO-201AD	D252		1
369	#N/A	203812540231	DIO ZEN 0.5W 4.94-5.20V MINIMELF	D254,D602,D605,D606,D608		5
370	#N/A	203812540236	DIO ZEN 0.5W 4.94-5.20V LLDS(MINIMELF)	D254,D602,D605,D606,D608		0
371	#N/A	203812670231	DIO ZEN 0.5W 16.82-17.7V MINIMELF	D253		1
372	#N/A	203812670236	DIO ZEN 0.5W 16.82-17.7V LLDS(MINIMELF)	D253		0
373	#N/A	204520700205	DIO SW 0.215A 70V SOT-23 SE.	D401,D402,D403,D404,D405,D603,D604,D610,D611,D612,D613,D614,D615,D616,D619		0
374	E-D-0403-2049	204520700207	DIO SW 0.215A 75V SOT-23 SE.	D401,D402,D403,D404,D405,D603,D604,D610,D611,D612,D613,D614,D615,D616,D619		15
375	#N/A	204520700305	DIO SW 0.2A 70V SOT-23 C.C.	D601,D607		0
376	E-D-0403-2135	204520700307	DIO SW 0.215A 75V SOT-23	D601,D607		2
377	#N/A	205800530131	DIO SI 1A 50V DO-213AB(MELF)	D255,D256		2
378	E-Q-0402-1087	210522000405	TR 40V 0.2A SOT-23 100-300	Q252,Q260,Q262,Q263,Q403,Q404		0
379	#N/A	210522000407	TR 40V 0.2A SOT-23 100-300	Q252,Q260,Q262,Q263,Q403,Q404		6
380	E-Q-0402-7019	210522000505	TR 40V 0.6A SOT-23 80	Q256		0
381	#N/A	210522000507	TR 40V 0.6A SOT-23 80	Q256		1
382	#N/A	211522000205	TR -40V -0.2A SOT-23 100-300	Q401,Q402		0
383	#N/A	211522000207	TR -40V -0.1A SOT-23 100-300	Q401,Q402		2
384	E-Q-0402-7018	211522000405	TR -40V -0.6A SOT-23 100	Q257		0
385	#N/A	211522000407	TR -40V -0.6A SOT-23 100	Q257		1
386	#N/A	243502600010	FET -55V -11A 0.175ohm TO-252AA	Q258		1
387	#N/A	243601000310	FET -30V -5.8A 0.045ohm SO-8	Q251,Q259		0
388	#N/A	243601000317	FET -30V -5.3A 0.05OHM LL SOIC-8	Q251,Q259		2
389	#N/A	243601000331	FET -30V -5.1A 0.055OHM LL SO-8	Q251,Q259		0
390	#N/A	2500082637	IC REGU LDO 2.5V 5A TO-252	IC256		1
391	#N/A	2500082837	IC REGU LDO 3.3V 5A TO-252	IC252		1
392	E-IC-0401-2927	2500088636	IC VOL DETECTOR 4.4V SOT-23	IC402		1
393	#N/A	2500161537	IC REGU LDO 1.8V 5A TO-263	IC253		1
394	#N/A	2510019129	IC PWM SOP-16P	IC251		1
395	#N/A	2530235227	IC IMAGE PROCESSOR PBGA-416B	IC401		1
396	#N/A	2600100353	IC TRIPLE 2:1 MULTIPLEXERS TSSOP-24P	IC607		1
397	E-IC-0450-0050	2610015107	IC 2 CHANNEL ANALOGUE SO16	IC602,IC603,IC606		3
398	E-IC-0401-2942	2610049742	IC CMOS 2K EEPROM SOIC-8P	IC601,IC604,IC605		3
399	#N/A	2610473212	IC F-MEM 4M(512K*8) 2.7V 70nS PLCC-32P	IC405		0
400	#N/A	2610473222	IC F-MEM 4M(512K*8) 3V TOP 70nS PLCC-32P	IC405		0
401	#N/A	2610487342	IC EEPROM 32K SO-8P 150MIL	IC403		1
402	#N/A	2610487612	IC EEPROM 32K SOIC-8PIN	IC403		0
403	#N/A	2610578014	IC DDR SDRAM 1M*32*4B 300MHZ FBGA-144B	IC404		1
404	#N/A	2610578017	IC DDR SDRAM 1M*32*4B 300MHZ FBGA-144B	IC404		0
405	#N/A	2610578514	IC DDR SDRAM 1M*32*4B 300MHZ FBGA-144B	IC404		0
406	#N/A	2640912700	IC 2610473223+5015029300	IC405		1
407	#N/A	2610473223	IC F-MEM 4M 3V TOP 70nS PLCC-32P	IC405		1
408	#N/A	5015029300	FIRMWARE VP2000S_V200L_0128.HEX 8BD6	IC405		1
409	#N/A	2816706700	INDUCTOR SMT 22UH M SMD	L253		1
410	#N/A	2816706710	INDUCTOR SMT 22UH M	L253		0
411	#N/A	2816721510	INDUCTOR SMT 10UH K	L254		1
412	#N/A	2816721580	INDUCTOR CD 10UH K SMD	L254		0
413	E-L-0408-1518	2921113212	BEAD CH 100MHZ 120 OHM 4A 1206	FB251,FB252,FB253,FB254,FB255,FB256,FB257,FB258,FB259,FB260,FB261,FB262,FB263		13
414	B-00001464	2970049500	PWB M0 L6 E0.5/I1 FR-6 170*119*1.6(I/F B			1
415	#N/A	3000750265	SWITCH ROLL BALL 4P P2.54			1
416	#N/A	3020016000	PLCCIC SOCKET PPS 94V0 PB			1
417	#N/A	3070337534	HEADER NY66 94V0 7P P2.0 R BROWN			1
418	#N/A	3071400334	HEADER NY66 94V0 4P P2.5 R			1
419	#N/A	3075308757	CONN D-SUB 15P R/A PC99 W/O SCREW			1
420	#N/A	3075316343	CONN DVI-D 29P P1.905 R			0
421	#N/A	3075316357	CONN DVI-I 29P P1.905 R			1
422	#N/A	3075316367	CONN DVI-I 29P P1.905 R			0

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
423	#N/A	3075353143	CONN D-SUB FEMALE 15P P2.29 BLUE			0
424	PL-00000474	3075415766	CONN FFC/FPC BOTTOM 30P P1.0 SMT			1
425	#N/A	3075415866	CONN FFC/FPC BOTTOM 8P P1.0 SMT			1
426	M-LB-0813-0913	3202005900	LABEL SERIAL 42*11 SONY			1
427	M-LB-0813-0914	3202009100	LABEL REGISTRATION 40*1			1
428	M-LB-0813-0915	3202215900	LABEL MCU 11*11 POLYESTER 50#			0.125

8. Exploded Diagram and Spare Parts List



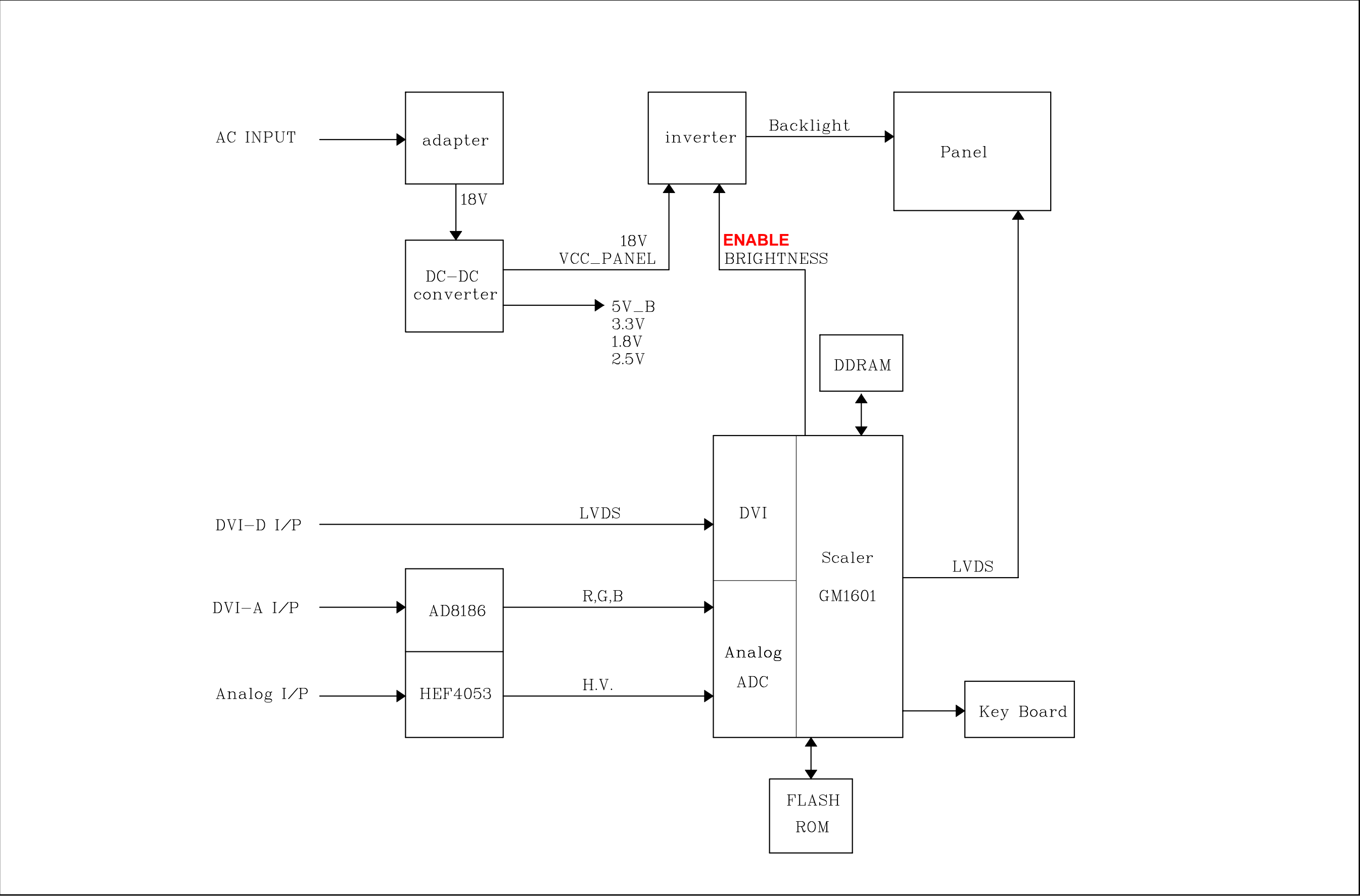
EXPLODED PARTS LIST (VP2000s-1)

ViewSonic Model Number: VLCD526064

Rev: 1c

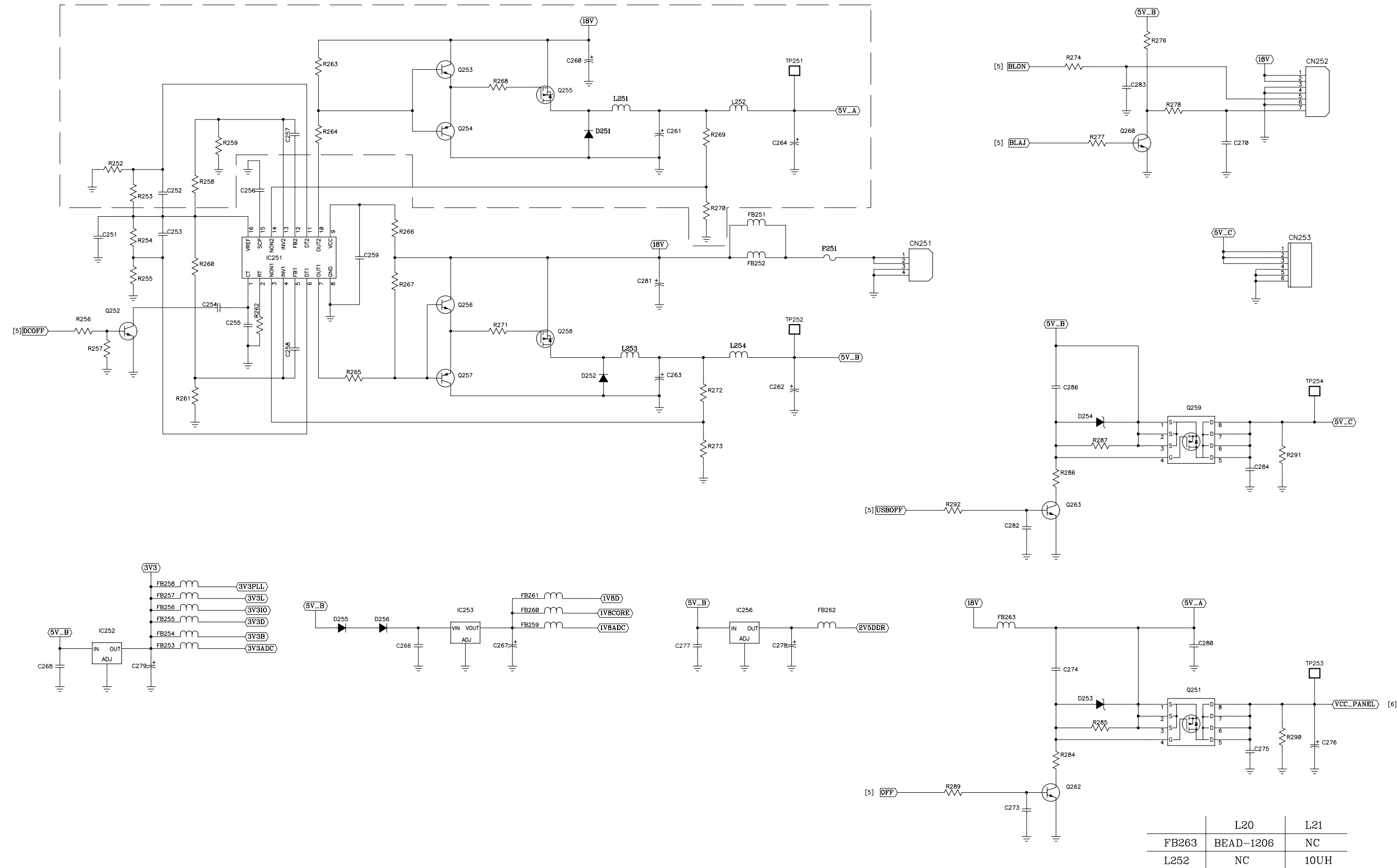
Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	C-FP-0301-1024	3361092601	F/B ABS SILVER VP2000S S0LFA1AT	1
2	M-MS-0808-8556	3200649100	NAME PLATE VSC -3-BRID LOGO	1
3	M-LCD-0826-0205	5052000450	LCD 20.1" TFT PANEL UXGA	1
4	M-BK-0805-0113	3460190601	BRACKET PANEL SECC 433.4*216.3*42 T.8 LG	1
5	A-00001842	4900210180	POWER SUPPLY 60W 18V 3.33A	1
6	B-00001844	5600110395	PWB ASSY I/F BD L20DBR 05GAB	1
7	M-MS-0808-8561	3460146100	BRACKET VESA SECC 110*20 T1	1
8	C-BC-0302-0627	3360255300	CABINET BACK ABS 41 SOLRA1AT	1
9	M-CV-0830-2462	3361207800	COVER BASE ABS 41 S8LBB1LS	1
10	M-MS-0808-8758	3200651100	NAME PLATE VIEWSONIC ABS 41 82.83*34.98	1
11	M-CV-0830-2458	3361207400	COVER VESA ABS 41S8LBB1LS	1
12	M-CV-0830-2463	3361207900	COVER HINGE1 ABS 41 S8LBB1LS	1
13	M-CV-0830-2464	3361208001	COVER HINGE ABS 41 S8LRB1LS	1
14	M-CV-0830-2461	3361207700	COVER STAND REAR ABS 41 S8LBB1LS	1
15	M-MS-0808-8639	3461752201	HINGE SECC 312.5*51.82 L20CBW05ABB	1
16	M-WR-0828-0739	3470308700	WIRE SADDLE NYLON66 94V2 41	3
17	M-CV-0830-2472	3360245300	COVER BOTTOM ABS 41 S0LBA1AT	1
18	M-MS-0808-8632	3460150703	BRACKET BASE2 SECC 173*190.4 T2 VP201	1
19	M-MS-0808-8635	3460151002	BRACKET BASE3 SECC 173*190.4 T2 VP201	1
20	M-MS-0808-8636	3460151102	BRACKET BASE1 SECC 173*190.4 T2 VP201	1
21	PL-PD-0714-0101	3240968900	RUBBER PAD 20*20 T3 BLK	1
22	PL-PD-0714-0100	3240957000	RUBBER PAD OD20 T4 BLACK	2
23	M-MS-0808-8633	3460150801	BRACKET BASE FOOT 1	1
24	M-MS-0808-8634	3460150902	BRACKET BASE FOOT 2	1
25	M-CV-0830-2459	3361207500	COVER STAND FRONT ABS 41 S8LBB1LS	1
26	M-MS-0808-8563	3460146300	BRACKET KEYLOCK	1
27	HW-00001848	3461226501	SHIELD CAN INV SPTH	1
28	HW-00001849	3461256200	SHIELD CAN SPTH	1
29	B-00001843	4900506980	DC-AC INVERTER FOR L20DBR	1
30	M-MS-0808-8627	3241127400	INSULATOR PC 231*13 T5	1
31	M-SW-0815-0224	3000725101	SWITCH MEMBRANCE PET	1
32	PL-NB-0707-1075	3360627100	POWER KNOB POM 901U 5140 S8LFB1LS	1
33	M-MS-0808-8559	3360506800	LED LENS	1
34	M-MS-0808-8630	3460150100	BRACKET PANEL SIDE-R	1
	M-MS-0808-8631	3460150200	BRACKET PANEL SIDE-L	1

9. Block Diagram

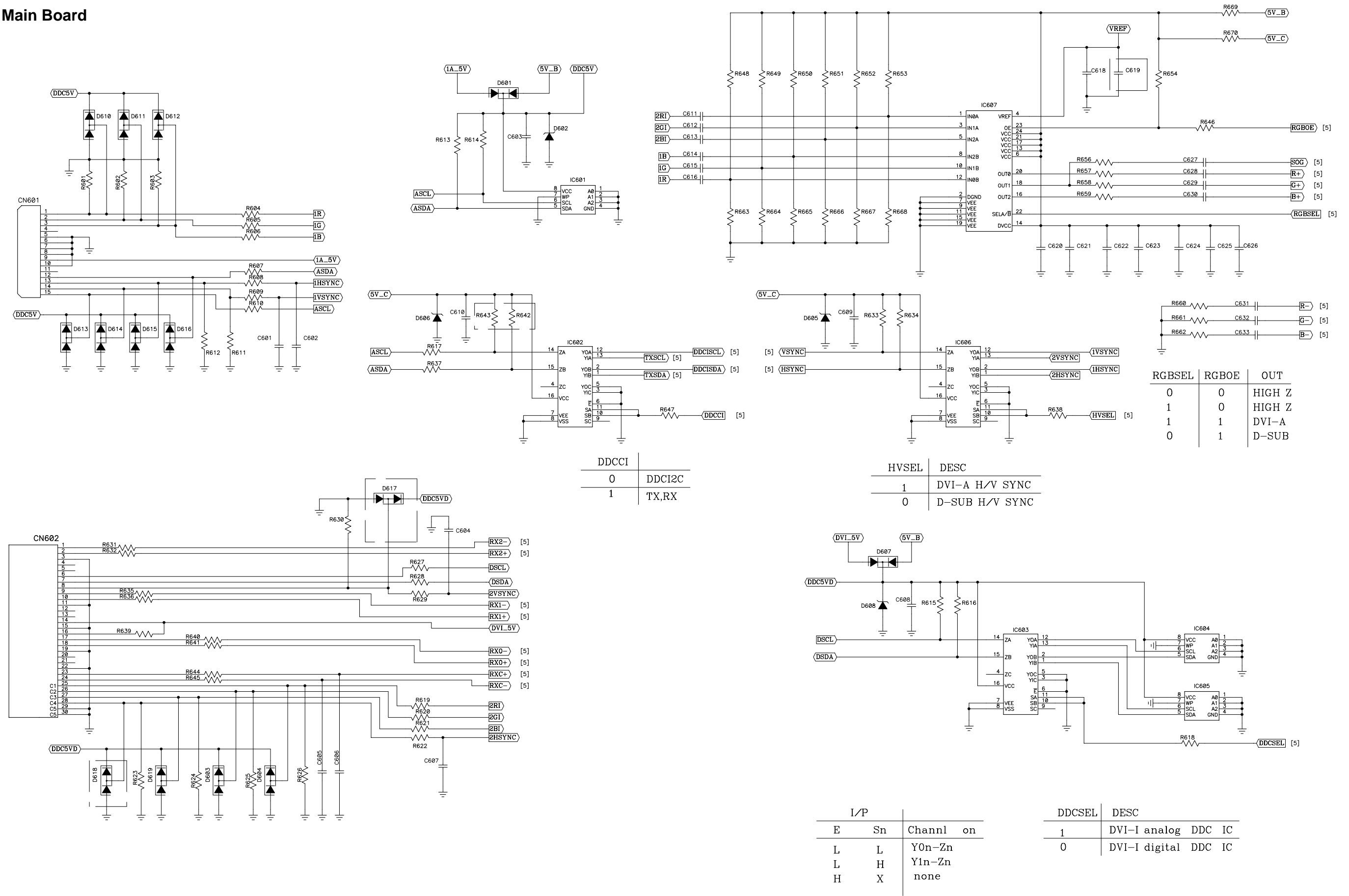


10. Schematic Diagrams

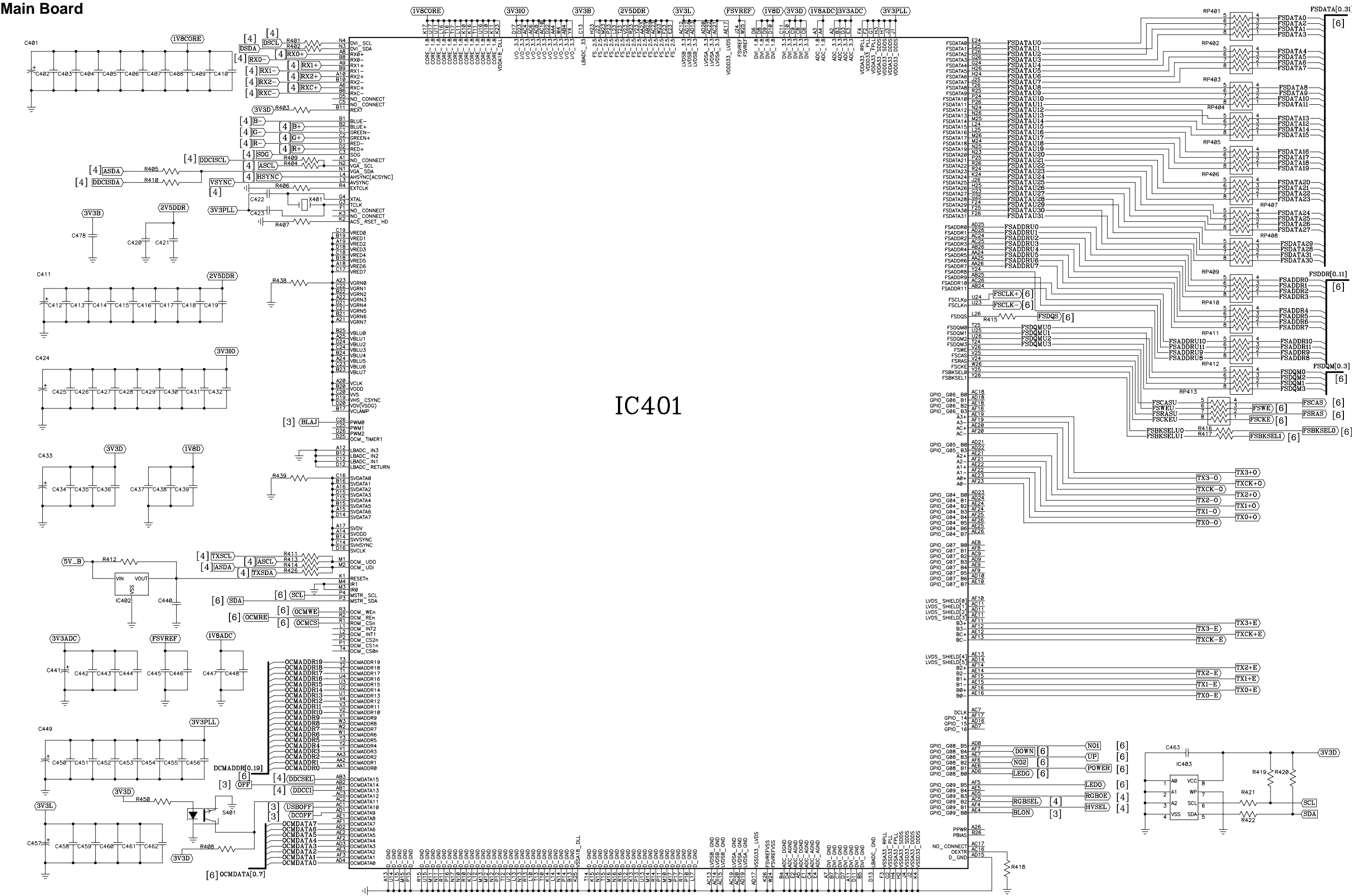
Power Board



Main Board

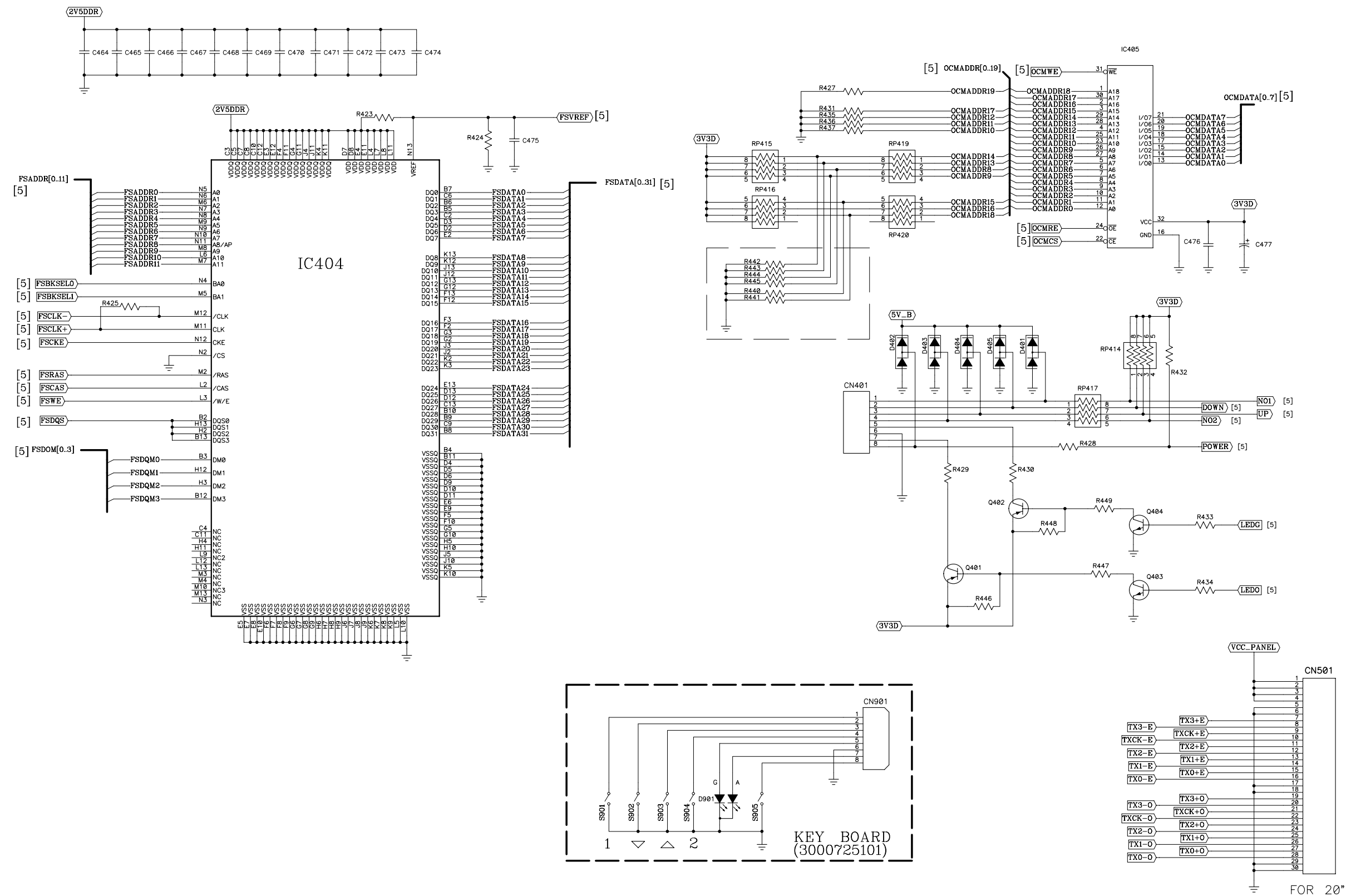


Main Board

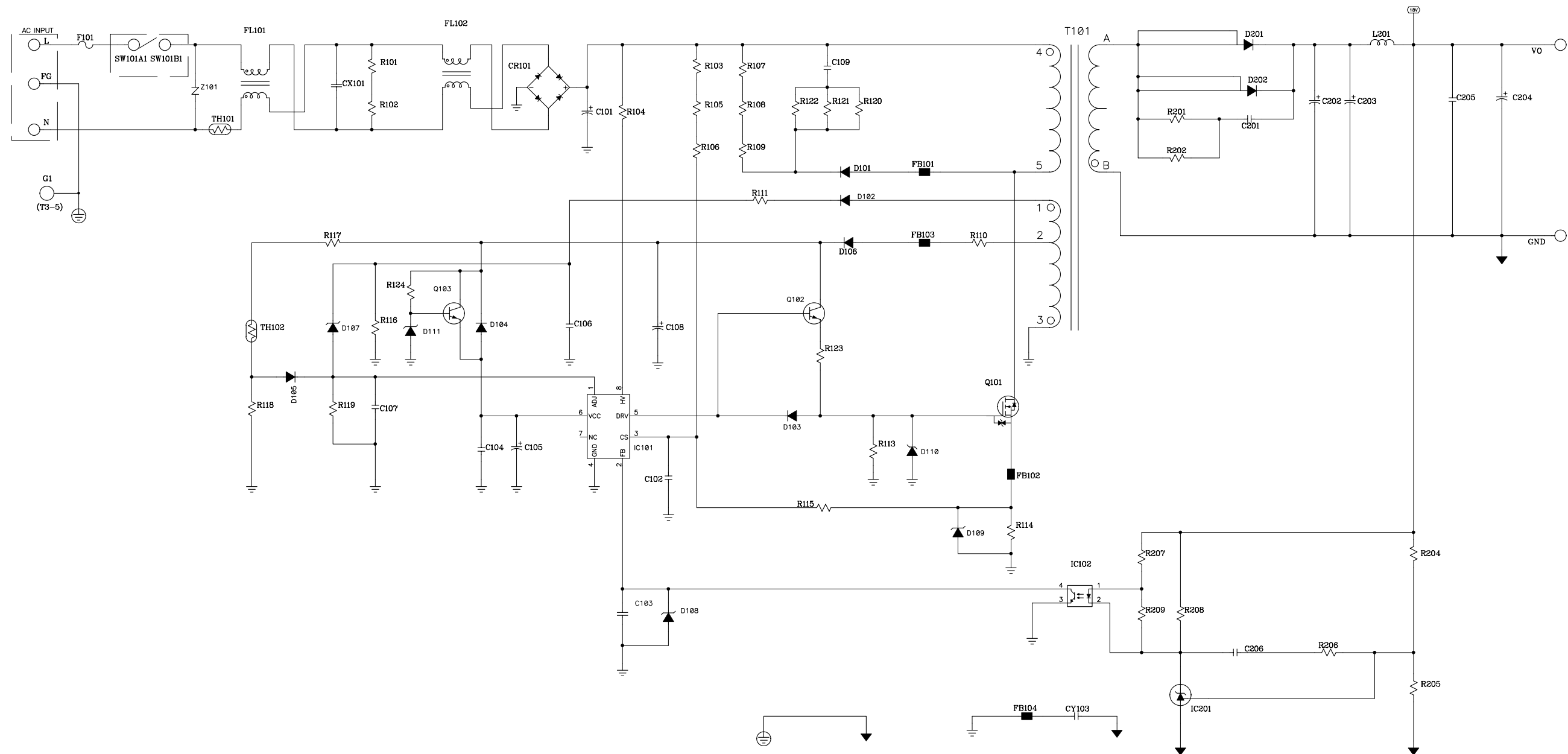


IC401

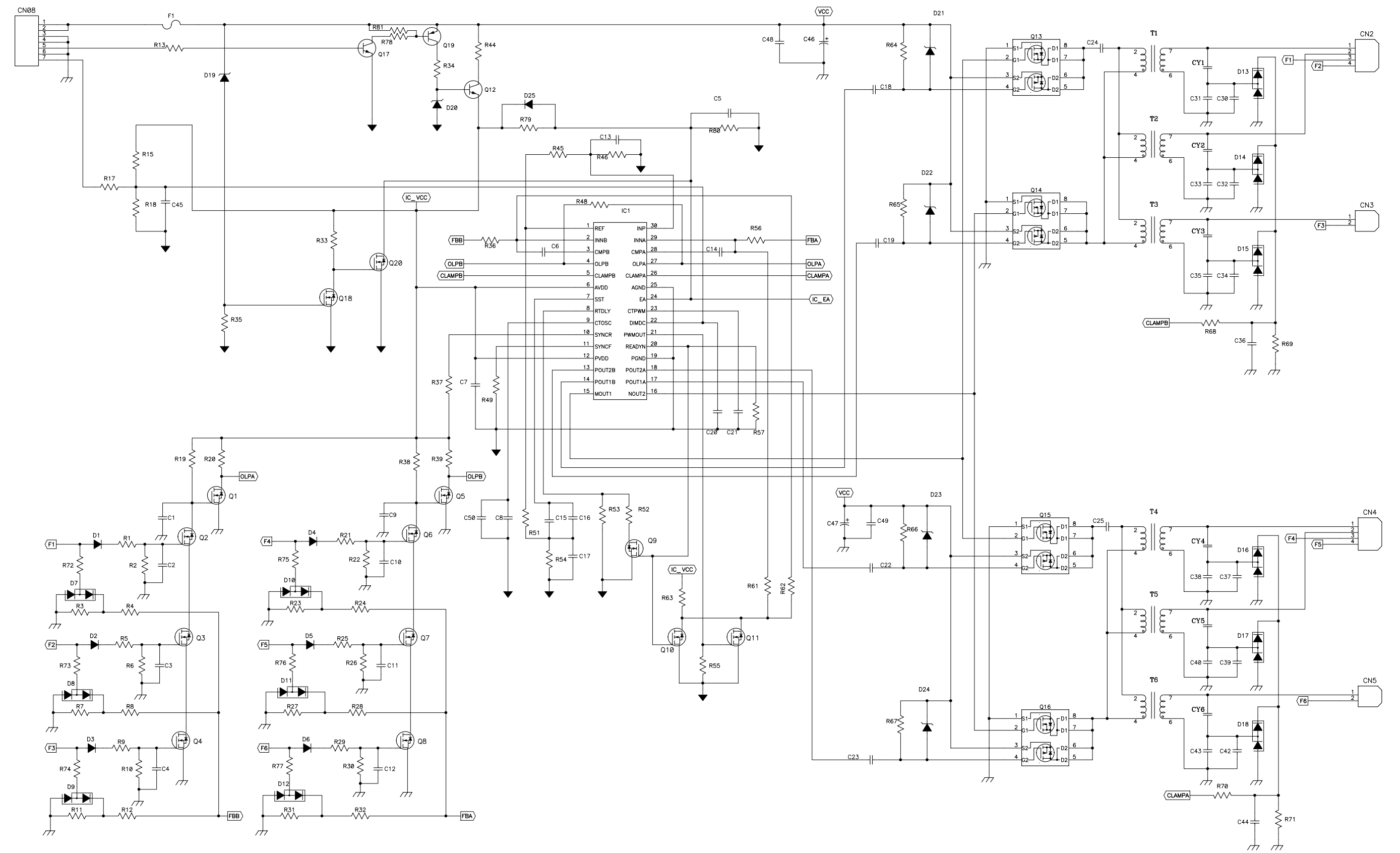
Main / Key Board



Power Board

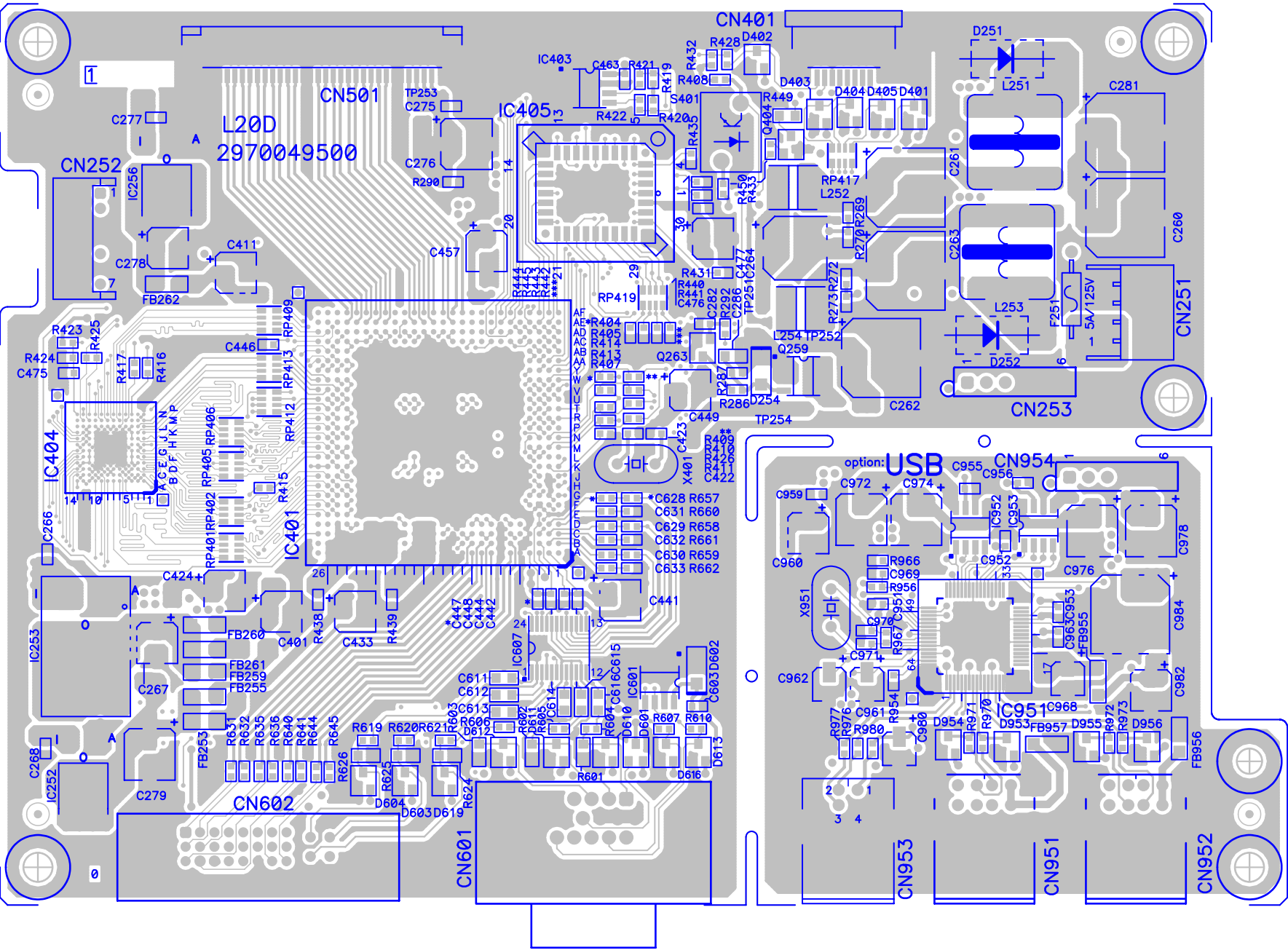


Inverter Board

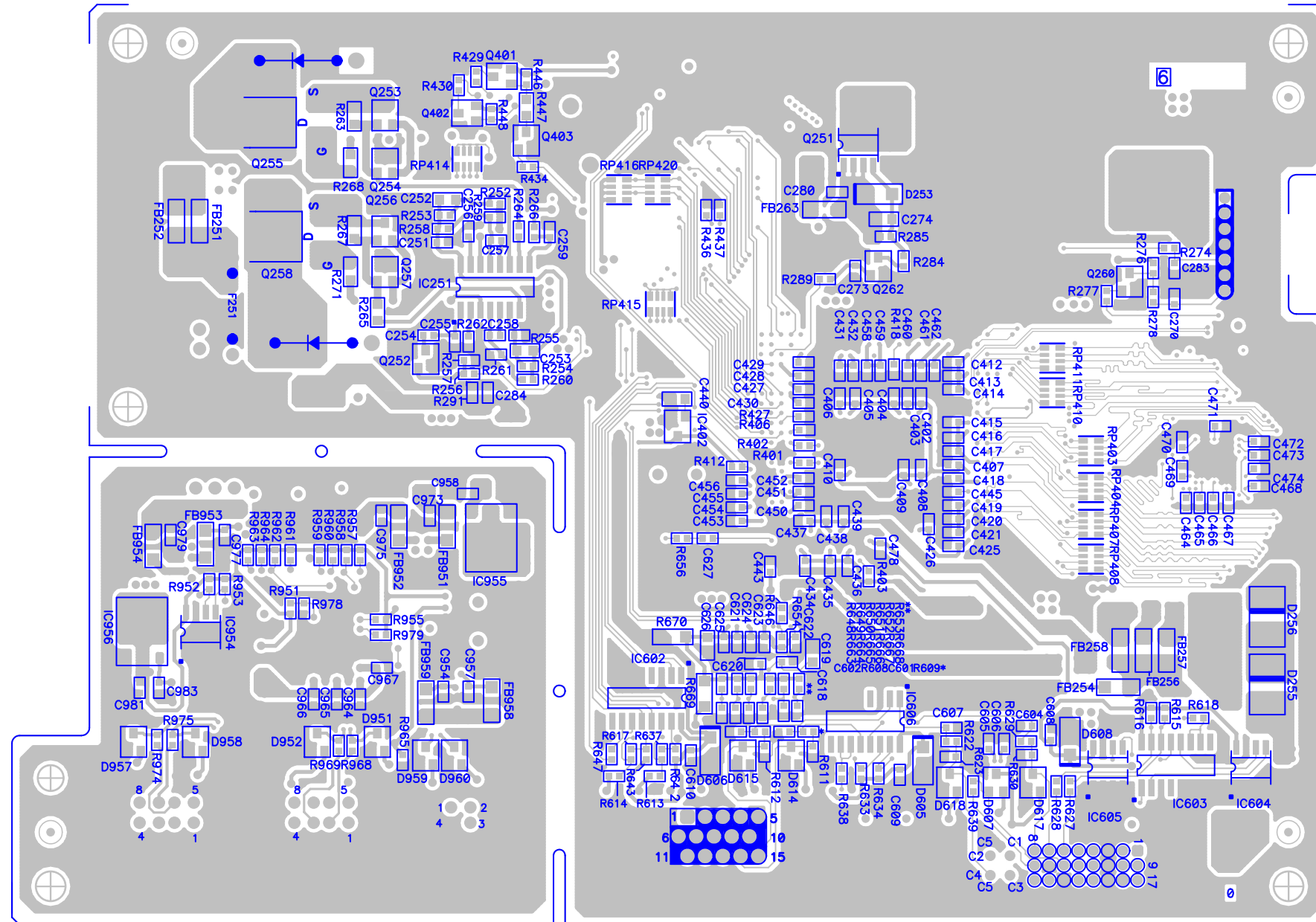


11. PCB Layout Diagrams

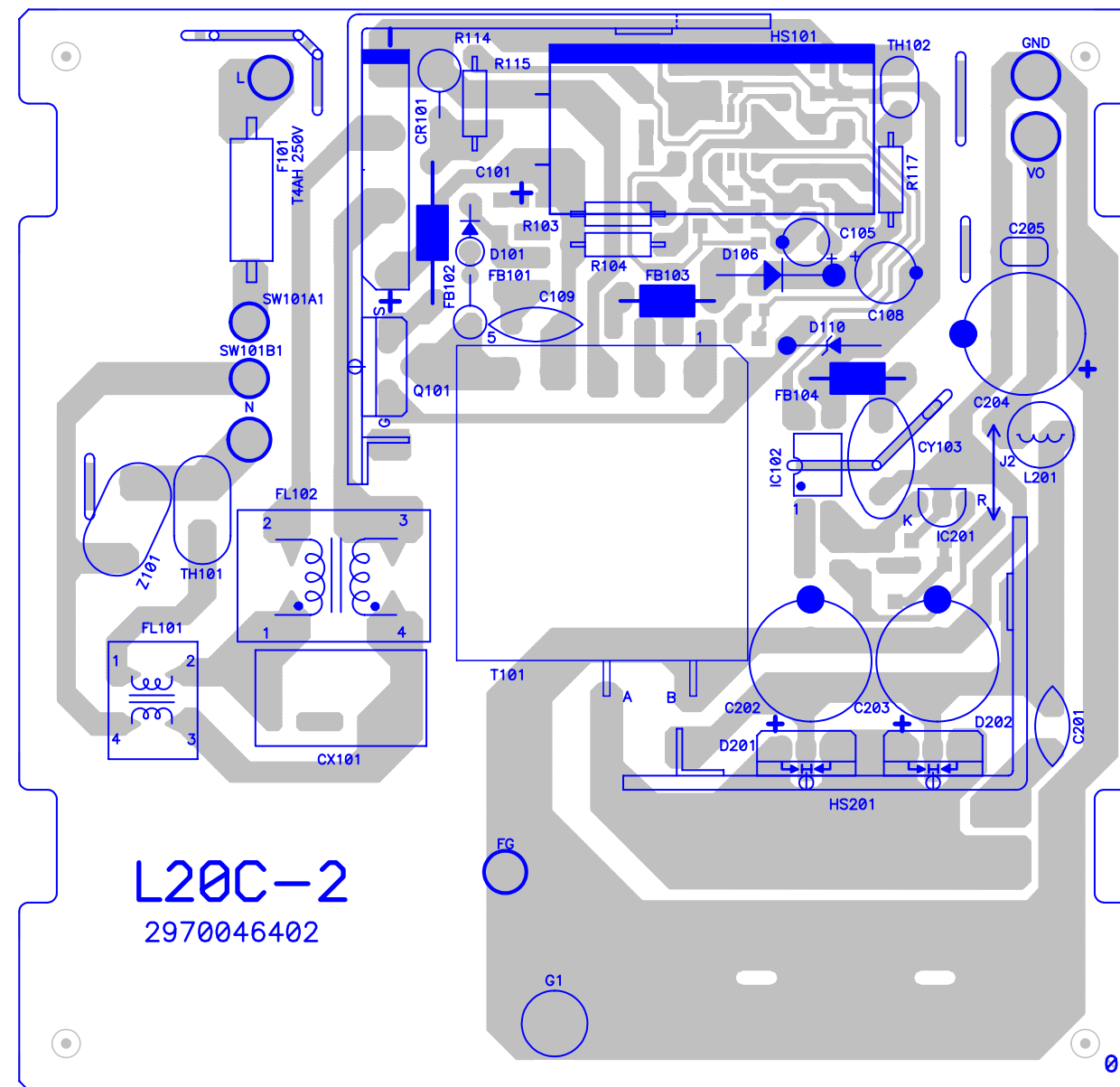
Main Board



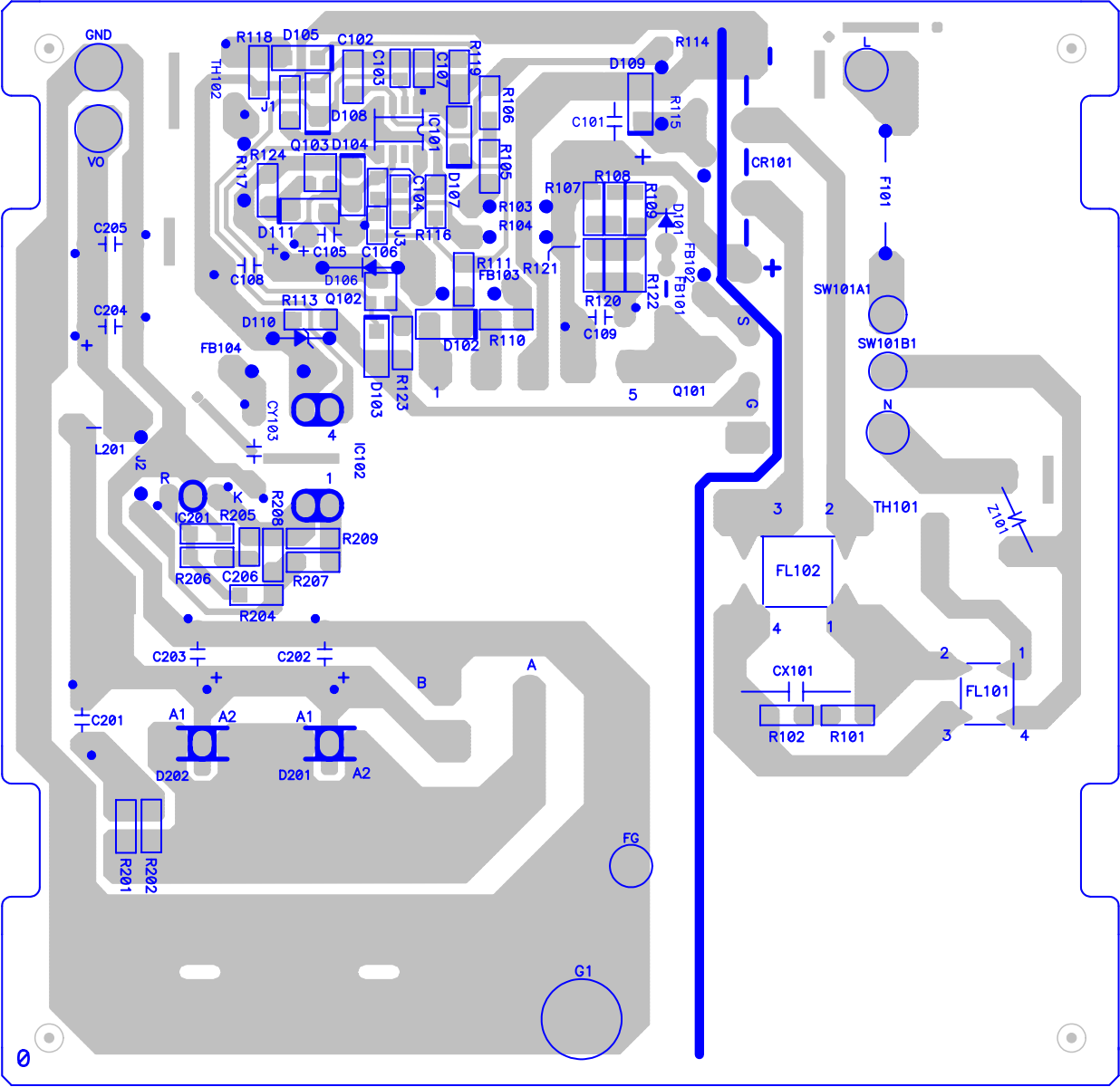
Main Board (Bottom)



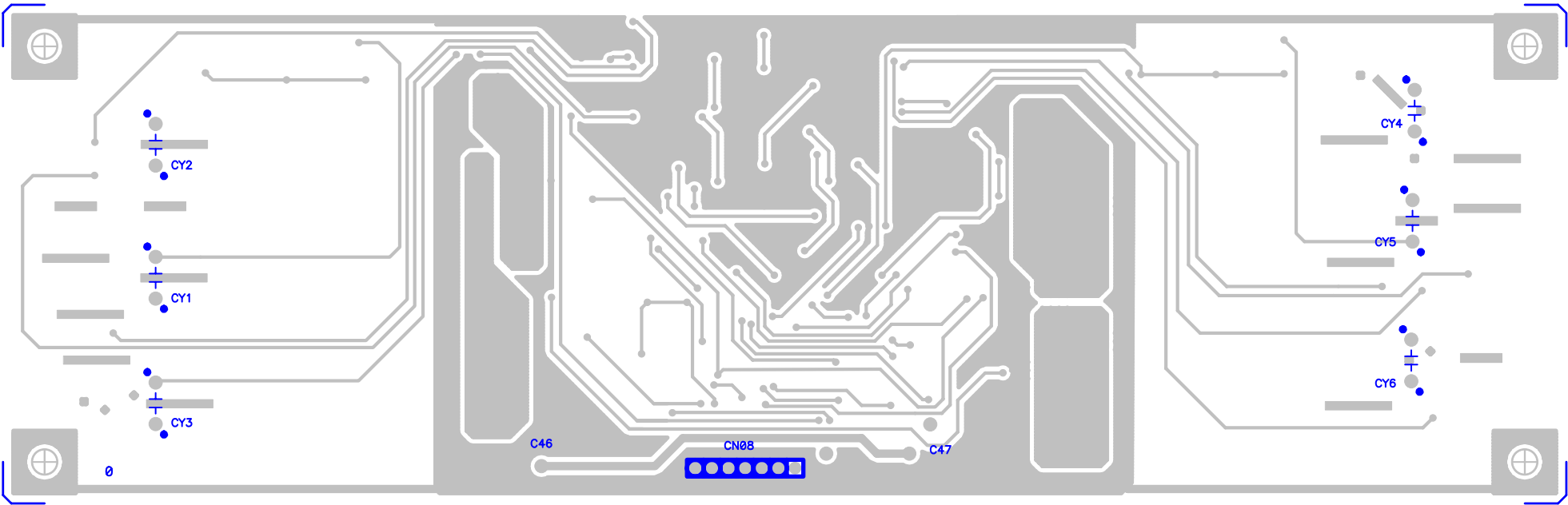
Power Board



Power Board (Bottom)



Inverter Board (Bottom)



Reader's Response

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content of the **VP2000s** Service Manual?

<i>Unit</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Recommended Spare Parts List				
8. Exploded Diagram and Spare Parts List				
9. Block Diagram				
10. Schematic Diagrams				
11. PCB Layout Diagrams				

B. Are you satisfied with the **VP2000s** Service Manual?

<i>Item</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic data:

Name:		Title:	
Company:			
Add.:			
Tel:		Fax:	
E-mail:			

After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943. You may also e-mail any suggestions to the Director, Quality Systems & Processes (marc.maupin@viewsonic.com)